

Dental

Abstracts

A selection of world dental literature / Volume 4 · Number 7 · July 1959





VOLUME 4 · NUMBER 7 · JULY 1959



A selection of world dental literature

*Lon W. Morrey, D.D.S., editor
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AMERICAN DENTAL ASSOCIATION 222 E. SUPERIOR ST. CHICAGO 11

Published monthly by the American Dental Association at 1009 Sloan Street, Crawfordsville, Indiana. Entered as second class matter at the Post Office at Crawfordsville, Indiana, under the act of March 26, 1956. Change of address notices, undeliverable copies, orders for subscriptions, and other mail items are to be sent to editorial and executive offices, 222 East Superior Street, Chicago 11, Illinois. Printed in U.S.A. Subscription \$8.00 a year in U.S.A.; \$9.00 outside U.S.A. Single copy \$1.00. Issue of July 1959, Vol. 4, No. 7. Copyright 1959 by the American Dental Association. All expressions of opinion and statements of supposed fact are those of the author of the abstracted article and are not to be regarded as expressing the views of the American Dental Association unless such opinions or statements have been adopted by the Association.

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3. *To supply enough data in each abstract and digest that the reader may determine whether he wishes to refer to the original article for more complete information.*

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Sterilization of dental hypodermic syringes and needles

Harry L. Levin. *M. Technicians Bul.*
10:29-34 Jan.-Feb. 1959

Infectious hepatitis and homologous serum hepatitis reportedly have been caused by the use of improperly sterilized dental hypodermic syringes in the mucous membrane of the oral cavity. Many reports assert that the methods of sterilization of syringes and needles frequently used in hospitals and in general practice are inadequate.

The author has modified Ogden's technic (1957) for the sterilization of needles and hubs. Figure 1 shows the armamentarium for a satisfactory sterile injection of a local anesthetic. In one of the two containers are the sterile needles and hubs. These previously had been inserted through the rubber diaphragm of an ampule containing lidocaine. The other container holds the unsterilized needles cleansed with a detergent; the lumens of these needles had been reamed with a stylet or smooth diagnostic broach. The needles later are dipped in alcohol, dried and inserted into the perforations of the shelf. Needle lumens should be kept clear and clean at all times prior to use.

Figure 2 shows the arrangement of the unsterilized needles in the container, ready for sterilization. Figure 3 illustrates the method employed to allow penetration of saturated steam under pressure in the autoclave. The cover is placed across the container at an angle of 180 degrees. After sterilization the container is permitted to cool for ten minutes to allow the needles and hubs to dry; then the lid is secured to the container by the two clamps.

Figure 4 shows the method of grasping the sterile needle with tongs. The needle is screwed to the syringe, previously autoclaved, and kept

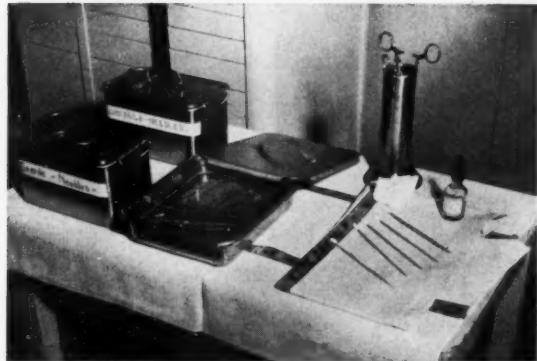


Figure 1 Equipment for administration of a local anesthetic

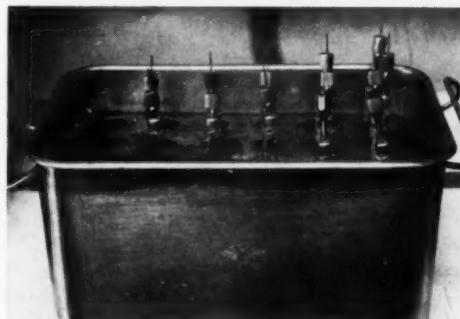


Figure 2 Container with unsterilized needles in position

in readiness in a preserving solution either of 70 per cent ethyl alcohol or 90 to 95 per cent isopropyl alcohol.

The assistant, standing on the operator's left, holds the syringe upright with the ampule still protecting the needle. When the operator has dried the patient's mucous membrane, he applies the topical anesthetic and antiseptic, prior to injection of the local anesthetic. On grasping the syringe, he will remove almost simultaneously the protective ampule from the needle. He then must eject a few drops to force out trapped air bubbles or extraneous matter that may have lodged within the needle lumen. The hand does not touch the needle or the hub in this technic.

The ampule protecting the autoclaved needle should be discarded, as the rubber now has become too soft.

Among common practices that should be condemned are the following:



Figure 3 Container prepared for autoclaving



Figure 4 Instrument tongs used to grip sterile ampule and needle

1. The practice of dipping the end of an ampule and swabbing the patient's mucous membrane with mercury compounds, such as thimerosal or nitromersol, is unsafe. There always is the possibility of pushing mercury ions deep into the underlying tissues which are susceptible to infection and irritation from metallic ions.

2. It is unsafe to allow ampules of local anesthetic to remain in a 1:1,000 solution of benzalkonium chloride that usually contains an antirust agent, sodium nitrite. This solution in time will attack anything metallic, usually the soft aluminum seals of ampules. Grain alcohol, 70 per cent, or isopropyl alcohol, 90 to 95 per cent, may be used as a preserving solution without fear of contaminating the syringe and ampules.

3. It is unsafe to allow syringes with needles attached to be immersed in a purportedly sterile

solution (usually a 1:1,000 solution of benzalkonium chloride). Capillary attraction takes this solution into the needle lumen. Unless the solution is ejected before penetration of the needle into the patient's mucous membrane, the sequelae may be unpleasant.

1300 North 75th Street, Philadelphia, Pa.

**Clinical investigation
of a new electroanalgesia apparatus**

Bernhard Matussek. *Deut.zahnärztl.Zschr.*
13:952-954 Aug. 15, 1958

Suzuki in 1950 developed an electroanalgesia apparatus, the effectiveness of which was based on an electrotonus, the lessened irritability of nerves in the region of the positive pole during the passage of an electric current.

Suzuki reported in 1956 that with the aid of his apparatus cavities were prepared in 204 patients, and that an excellent analgesic effect was obtained in 91 per cent.

Cavity preparations with Suzuki's apparatus were later carried out at the Dental Clinic of the University of Mainz, Germany. An adequate analgesic effect was observed in 81 per cent of patients. Similar results were reported by Kluczka, Grasser, Kothe, and Iskraut.

The German dental industry recently offered new electroanalgesia appliances to dental practice, claiming that complete analgesia will be obtained in at least 80 per cent of patients.

The most recently developed electroanalgesia apparatus, the "Heri Elan," was investigated at the Dental College of the Free University of Berlin. Following exactly the directions given by the manufacturer and Suzuki, the author prepared 50 hypersensitive deep cavities. Prior to the use of the electroanalgesia apparatus, the patients were assured that this "miracle appliance" would obtain immediate and absolute absence of pain sensation during cavity preparation. After the apparatus was switched on, 49 of the 50 patients reported insensibility to pain. Without their knowledge, the apparatus was switched off during completion of the cavity preparation, and surprisingly the result was almost identical. The experiment was repeated several times. Although the analgesic effect claimed by the patients var-

ied, there appeared to be no statistically significant difference.

The following conclusions were reached:

1. The analgesic effect claimed by the manufacturer of the "Heri Elan" electroanalgesia apparatus obviously was produced by reactions of the patients to suggestions and not by the apparatus. Without these suggestions, not 1 of 86 patients felt relief from pain during cavity preparation.

2. Clinical investigation of the effects obtained by this type of electroanalgesia apparatus did not confirm the results reported by Kluczka, Grasser, Kothe, Iskraut and Suzuki.

3. As long as the use of an electroanalgesia apparatus cannot obtain adequate analgesia in the majority of patients, infiltration anesthesia appears to be the method of choice to achieve absence of pain during cavity preparation.

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Deaths under anaesthesia in the dental surgery

Victor Goldman, *Brit.D.J.*
105:160-163 Sept. 2, 1958

During the four years from 1952 to 1955, there were 6,682,750 dental anesthesias given through the National Health Service, and 56 deaths occurred under anesthesia, in 20 of which an intravenous barbiturate had been administered. Not included in the figures quoted are the estimated 250,000 dental anesthetics administered annually to hospital outpatients, and to patients in school and antenatal clinics, or in private practice. When these figures are added, the total is 7,682,750 patients with 56 reported deaths, or a death rate of 0.0073 per 1,000. This probably is one of the lowest percentages recorded in such a large series, and one which does credit to all concerned and particularly to the type of outpatient dental anesthetic given in England. Of the deaths under pure nitrous oxide and oxygen, it is presumed that the majority were caused through a deficient airway, the obstruction being caused either by posture or by a pack. Each of such deaths must be regarded as a preventable death.

When the death rate from intravenous barbiturates is considered, the picture is very different. It can be estimated that the barbiturates were used in 1 of every 100 patients, in which event the 20 deaths reported from intravenous anesthetics yield a death rate of 0.26 per 1,000. This then would leave by inhalation methods alone a death rate of 0.0047 per 1,000. Before any move for the general use of intravenous barbiturates in the dental surgery for the outpatient is supported, the gravely increased risk to life should be considered. The death rate is distressingly high for intravenous barbiturates. There are several reasons for this. In the majority of instances, the barbiturate is used because on a previous occasion the patient had been unmanageable under nitrous oxide anesthesia. Sometimes the intravenous anesthetic is given to a patient lying in bed at home. This is a dangerous procedure—the posture is wrong because more than four teeth never should be extracted with the patient lying down unless there is adequate protection of the airway by means of an endotracheal tube, efficient packing and constant suction. Again, there are seldom any adequate methods of resuscitation available in the event of need.

A patient who is not intubated is definitely safer sitting up in a dental chair; this implies that the throat is adequately packed and that the airway is unobstructed. It must be remembered that the patient often takes a deep breath just before recovery, and unless the head is held well forward at this moment there is a grave risk of blood being inhaled.

Once dental anesthesia has been established and the initial oxygen administered to the patient, the amount of oxygen should be raised by 1 per cent every minute or so in order that after five minutes of anesthesia the patient is receiving at least 10 per cent of oxygen. After ten minutes at least 15 per cent of oxygen must be received by the patient, and so forth. If it is found that quiet and adequate anesthesia cannot be maintained with these amounts of oxygen, then an adjuvant such as trichloroethylene should be added, or the administration abandoned.

The widespread use of intravenous barbiturates in dentistry should not be encouraged, except in the hands of the expert.

Eastman Dental Hospital, London, England

Orthodontics

Orthodontic treatment of prognathism

Otto Neuner. *Österr.Zschr.Stomat.*
55:365-374 July 1958

It is often difficult to determine whether the disharmony between dental arches and jaws in instances of Angle's Class II and III malocclusions has been caused by a sudden arrest in the growth and development of the lower jaw or by a primary overdevelopment of the upper jaw. Prognathism, however, can be caused by disturbances of the temporomandibular articulation.

There are many instances reported in the literature in which the lower jaw is forced to occlude in an abnormal forward position, usually caused by cross-bite in the anterior region. This cross-bite often is associated with a contracted or underdeveloped anterior part of the upper jaw.

In all instances of true prognathism—even if an edge-to-edge bite is present—the prognosis of orthodontic treatment is excellent if Andresen-Häupl's activator and the screw attachment (developed by the author) are used.

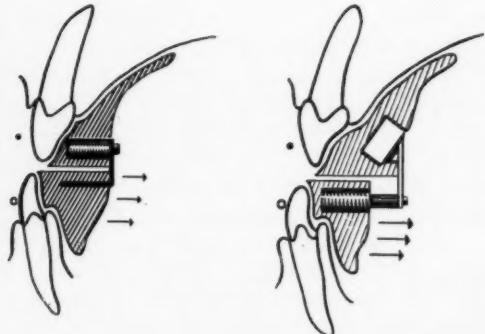
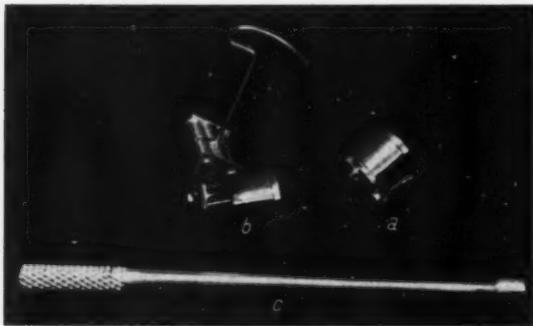
The design and use of Andresen-Häupl's activator are well-known and need no description. The author's screw attachment—design I (Fig.

1, a)—consists of a sagittal screw, fixed to the upper part of the activator, and a hooklike retention bow. Design II (Fig. 1, b) consists of the sagittal screw, attached to the lower part of the activator, and a transversal extension screw attached to the upper part.

Casts are made before construction and prepared by necessary grinding to fit in the desired functional position.

In most instances of prognathism, early orthodontic treatment of the deciduous dentition is advisable to create a satisfactory overbite. In children showing a moderate inverted overbite but no overjet, the grinding of molar cusps and incisal portions of the crowns of the deciduous anterior teeth results in an improved intermaxillary relationship. Should relapse occur at the time of the eruption of the permanent incisors, orthodontic treatment should be repeated to obtain a condition in which the upper incisors overlap the lower incisors when the jaws are closed. If, however, relapse should recur in the permanent dentition, the prognosis for continued orthodontic treatment is unfavorable. In such instances it is recommended that the orthodontist should wait for a possible progressive prognathic de-

Figure 1. Left: The author's screw attachment. a, design I. b, design II. c, specially constructed screwdriver. Center: Design I in position. Right: Design II in position



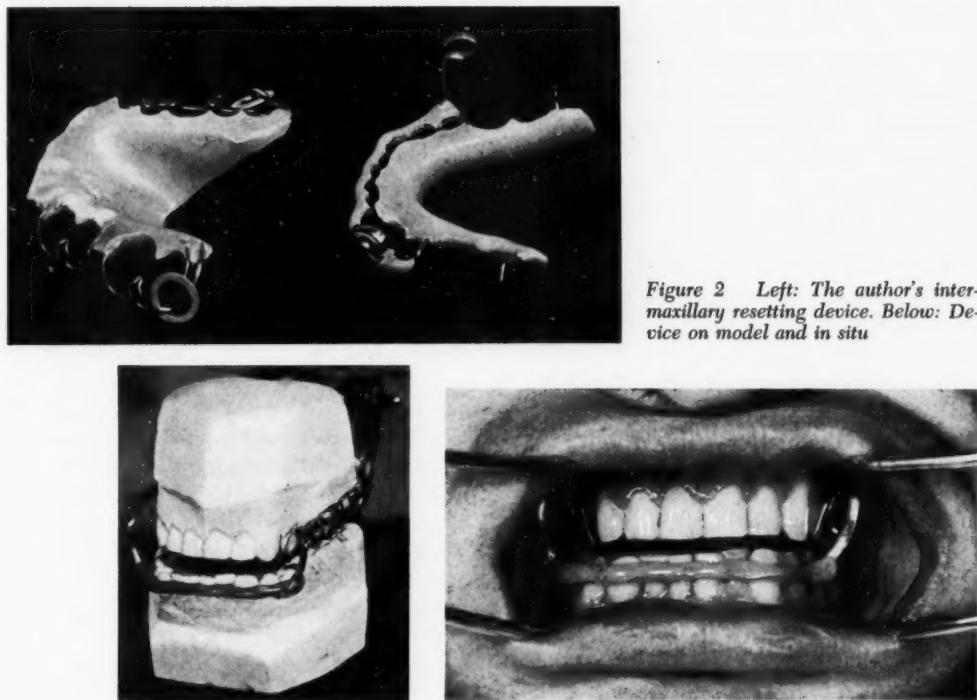


Figure 2 Left: The author's intermaxillary resetting device. Below: Device on model and in situ

velopment until the patient is 18 to 20 years old. Then the use of the author's resetting device (Fig. 2) is indicated.

This appliance consists of a lingual splint made of acrylic resin combined with a buccal wire bow, an active extension plate and a hooklike clasp. The apparatus can be manipulated easily by the patient and should be worn day and night. Wearing the appliance—even for prolonged periods of time—will not cause discomfort.

Even in delayed or extreme instances of prognathism, the results of such a combination treatment will be satisfactory.

These orthodontic appliances may be used to: (1) establish an occlusion which permits undisturbed mastication; (2) improve the esthetic appearance in instances of maxillofacial disharmony; (3) open the bite preliminary to additional orthodontic treatment; (4) free locked isolated teeth or entire tooth groups, and (5) decrease the necessity for posttreatment surgical interventions.

Prior to orthodontic treatment, however, a dis-

tinction should be made between "true" and "false" prognathism. Conditions symptomatically resembling prognathism may develop not only through an inherited predisposition but through intrauterine or extrauterine factors.

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Orthodontic diagnosis

A. Orlik-Grzybowska. *Czas.stomat.* 11:629-633
Oct. 1958

The Congress of the Polish Orthodontic Association, recently held in Poznan, recommended for orthodontic diagnosis the continued use of Angle's classification of malocclusion, modified by the systematic arrangements suggested by Kac and Andersen.

The Congress thereby recommended an almost obsolete diagnostic procedure which—in the author's opinion—does not fulfill the requirement of modern orthodontic practice.

Modern orthodontic diagnosis must be based on different findings such as determined by the recent approach to evaluate the interrelations existing between face, jaw and bite as well as the disturbances in growth and development which involve the facial skeleton and thereby the masticatory function and efficiency.

Modern orthodontic diagnosis must take into consideration biochemical, biomorphic, biodynamic, biogenetic, biomechanic, biometric and biophysic factors which change according to the physiologic age in each patient.

The diagnostic significance of the use of cephalometry, teleroentgenography and profile roentgenography is emphasized. Specific consideration should be given to the mesiodistal width of deciduous and permanent teeth, especially incisors, and to the relations between the nasal and subnasal regions and the height of the face.

The usefulness of the suggested orthodontic diagnostic method in which all these factors are to be considered has been proved in the orthodontic examination and treatment of the many thousands of Polish preschool and school children, carried out by the staff of the Orthodontic Clinic of the Medical Academy of Warsaw.

Chocimska 22, Warsaw, Poland

'Ugly teeth'

C. F. Ballard, *M. Press* 241:78-83
Jan. 28, 1959

The important etiologic factor in the production of malocclusion is the inheritance of morphologic variations of hard and soft tissues. The old idea that every individual was born with a potentially normal occlusion and that only environmental factors disturbed the development to produce malocclusion is untenable. Observers of racial groups that until recently have had only a small percentage of malocclusions now are finding increased numbers of malocclusions, although the environment of these groups is improving.

Racial groups which have the lowest incidence of malocclusions are those that have remained isolated from admixture. The highest incidence of malocclusion is amongst those racial groups that have the greatest admixture of racial types. Improved survival rates also may be re-

sponsible in part for the sudden increase in the incidence of malocclusion in, for instance, the Australian aborigine or the African Negro.

All investigations carried out so far confirm the clinical observation of a strong hereditary factor in the origin of malocclusion. Parents frequently comment that the type of malocclusion their child has is a family characteristic.

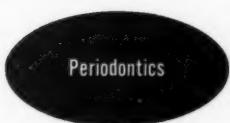
The teeth and the alveolar bone that support them grow from the maxillary and mandibular bones between the soft tissues of the tongue, the lips and cheeks. The relationship of the mandible and maxilla is determined by the inherited skeletal morphology. The direction in which the dento-alveolar structures grow from the dental bases is determined by the morphology, posture and behavior patterns of the soft tissues, likewise determined by inheritance. The inherited factors are within the skeletal and soft tissue morphology. Characteristics of morphology remain remarkably constant and cannot be changed either by treatment or, in the instance of soft tissue behavior, by the conscious effort of the individual.

Neither nasal obstruction nor thumbsucking are important factors in the production of malocclusions, although persistent thumbsucking will tend to exaggerate the malocclusion that the inherited morphological features produce.

The author has never seen a malocclusion produced by such habit activities as pencil biting, biting of lower lip, or posture habits during school reading or watching television. The individual is not as plastic in his environment as some authors have assumed.

Our society is accepting wider and wider variations from the textbook normal tooth arrangement. The aim of orthodontic treatment is only to change the position of the teeth (if the morphology of the individual permits it) to such a position that the teeth are not esthetically unsatisfactory. Most orthodontic treatment is carried out for esthetic reasons; either the patient or the parents object to the appearance of the teeth. It would be unwise to assume that all deviations from the normal should be treated because (1) it is not possible in many instances to produce a "normal" occlusion, and (2) many of the variations from the normal are attractive.

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Periodontics

**Marginal periodontal disease:
comparison between clinical findings
and roentgenographic interpretations**

Eugen Fröhlich. *Parodontol., Zürich* 12:89-99
Oct. 1958

Marginal periodontal disease usually is divided into two types: (1) horizontal atrophy, and (2) vertical atrophy. Strong objections, however, can be made to such a classification. It is almost impossible to determine by roentgenographic examination whether the bone loss is caused by atrophy or resorption as a result of an inflammatory process. In instances of vertical atrophy there is always a rarefying osteitis and never a nutritional deficiency present.

Many authors, especially Häupl, have stated that an atrophy of the marginal periodontium does not exist but that the inflammatory process alone causes the disease.

Proper interpretation of the roentgenograms is essential in making a correct diagnosis. There exists, however, a tendency among dentists, especially periodontists, to use roentgenograms not only as a confirmation of the clinical observations but to value them even higher than the clinical observations. Such an opinion is deceptive, because roentgenograms should not be considered alone in the diagnosis and treatment planning of periodontal disease.

Only the parallel technic with an object focus distance of 40 cm. obtains a diagnostically useful roentgenogram of the normal or pathologic periodontium. The vestibular edge of the alveolar process of both jaws can be projected incisally and the oral border palatinally if an angle is established between the long axes of the teeth and the film.

As the result of a comparative examination of a series of prepared jaws, carried out at the Dental Institute of the University of Tübingen, Germany, it can be concluded that the reproduc-

ability in roentgenograms of the various forms of marginal resorption is inadequate.

In instances of extreme marginal resorption in the molar region, the roentgenographic observations confirm the clinical (anatomic) observations only if the central ray lies in the plane of resorption and the film and the long axes of the teeth are parallel to each other.

Step resorption is visible roentgenographically when the marginal alveolar wall provides adequate roentgen contrasts and when the level of resorption forms a step with the limbus (lying apically) to which the roentgen rays are parallel.

Lateral resorption becomes visible in roentgenograms if the resorbed region is not overshadowed by roots or bony walls.

The deep funnel-shaped penetration of the periodontium is roentgenographically imperceptible for the following reasons: (1) in root regions the fine changes occurring in the osseous tissue are invisible and the resorption usually is hidden by the shadows of the teeth, and (2) the inner and outer compact bones remain standing laterally and medially to the funnel-shaped defects of the periodontium covering the resorption region so that even in the interdental septal region the base of the periodontal pockets cannot be visualized.

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The role of periodontology in gerodontics

Donald A. Kerr. *Parodontopathies* 15:19-21
July 7-12, 1958 [in English]

The problem of gerodontics is steadily increasing mainly because of the various public health procedures which are prolonging the life expectancy of man.

The changes in the periodontal tissue associated with senescence are caused by the following factors: (1) functional wear, promoted by attrition and resulting in broader facets and decreased resistance; (2) physiologic reduction of the alveolar bone resulting in increased tooth crown length, reduced root length and decreased resistance to masticatory forces; (3) reduction in quantity and alteration in quality of the saliva resulting in changed dietary habits and increased calculus deposition; (4) changes in the metabolism resulting in intensification of degenerative

processes in the body as a whole and in the periodontal membrane in particular; (5) loss of teeth affecting the nutrition and accentuating degenerative disease in various parts of the body which—in turn—affects the periodontium, and (6) disturbances in the function of the temporomandibular joint caused by multiple tooth loss.

An intense educational program should be initiated to stress the importance of early recognition of periodontal disease in senescent persons. An important method of meeting the problem of periodontology in gerodontics is to establish instructional courses for the general public, emphasizing the advantages of preventive periodontics.

There are two methods of handling the geriatric problem: (1) preventing the effects of local and functional factors, and (2) preventing changes in the metabolism associated with senescence.

These procedures, however, will be of little value unless the aging or aged patients are educated to the facts that such procedures are available and that successful periodontal treatment should be initiated as early as possible.

With such an educational approach, periodontal disease in the senescent persons can be reduced.

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Diagnosis of periodontal disease

J. Staz. Parodontol., Zürich 12:101-104
Oct. 1958

The diagnosis of periodontal disease depends essentially on the definition of that term, on the clear understanding of the etiology, pathology and clinical manifestations of the different forms of the disease and on the early recognition of the initial lesions.

The nomenclature and classification of periodontal disease is confused and unsatisfactory, although many attempts have been made to establish some degree of international agreement on this subject.

It can be assumed that periodontal disease is not in itself a separate disease entity but rather a syndrome reflecting the signs of many different

diseases, some of which may originate in the oral cavity whereas others are of a general or systemic character. Any oral manifestation of a disease which basically is systemic in origin should be excluded from the category of periodontal diseases.

The characteristic changes in the periodontium, whether they are caused by local or systemic factors, or perhaps by combinations of both, have definite features. These form the main basis for diagnosis, which, apart from the consideration of etiology and pathology, requires the recognition of the clinical manifestations and incipient lesions. The full investigation should include a complete medical examination with special attention being given to the patient's family history, the endocrine and nutritional background and emotional stress factors.

In periodontal disease, changes from the normal condition are observable in the gingival tissues and tooth supporting structures. These changes have to be charted and recorded according to the clinical, roentgenographic, photographic, histologic, bacteriologic, biochemical and clinicopathologic findings.

The clinical findings are classical and require no further elaboration except the detection of calculus, the periodontal measurements, the tooth mobility measurements and the complete bite analysis.

Many of the aids to diagnosis of periodontal disease advocated in literature are not within the scope of routine dental practice and are, therefore, beyond the resources of the average practitioner.

For many of these recommended investigations the facilities of a general hospital, clinic or specialized research institute are required. In severe instances, such investigations are of great value; nevertheless, in the observations of the general dental practitioner lies the main diagnostic value.

In spite of all the efforts of the dental profession and the many attempts to improve early diagnosis and preventive procedures, the incidence of so-called "periodontal disease" is steadily increasing.

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Pedodontics

Emergency treatment of dislodged incisors using soft alloy splints

Geoffrey L. Slack and Richard H. Birch.
D.Practitioner 9:74-77 Nov. 1958

A technic for the emergency splinting of a child's dislodged incisors utilizes the soft alloy plate readily available in England from the caps of milk bottles. The splint is rigid, holds the replanted tooth firmly in place, withstands the forces of mastication, and is well tolerated by the soft tissues. No laboratory work is necessary.

The dislodged tooth is held by the crown in a napkin while the root surface is washed in a sterile dish with normal physiologic saline solution and penicillin. The cementum surface should not be scraped, damaged or allowed to dry. The apical 2 mm. of the root is removed with a disk, to facilitate pulp removal and allow a closer apposition of the surfaces of the root and socket when the tooth is replanted. From the apical end, the pulp is removed and the root canal reamed and filled with gutta-percha. A milk bottle top is adapted to cover the dislodged tooth and two adjacent teeth on either side, leaving space for the underlying cement. The metal is trimmed peripherally to allow labial extension to cover the lacerated soft tissues if necessary.

The blood clot is removed and the socket lightly curetted. The region is isolated with cotton rolls and a saliva ejector, and the tooth firmly seated in its socket. A thin mix of Ames Black Copper Cement is flowed onto the adjacent teeth. The prepared splint is half filled with cement and gently inserted so that the replanted tooth is held in position. The occlusion is checked. When the cement has set, any edges of metal are burnished over.

The patient is recalled after four or five days for examination, but told to attend earlier if symptoms develop. The splint should be removed after 8 to 12 weeks. The soft alloy splint is stripped off. Fracture lines are cut in the cement, vertically and along the incisal edge, with a bur. The sections are split off, avoiding undue pressure on the teeth. The interdental spaces are cleared of cement, and the replanted tooth is tested for mobility and occlusion.

Three case reports illustrate the technic's usefulness. The technic has its limitations, for it can be applied only to one, or at most to two, dislodged teeth, although it still may be useful as a temporary expedient until more extensive splints can be prepared.

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Endodontics

**Capping of the pulp:
the processes involved and their outcome**

Hilding Nyborg, *Odont.Tskr.* 66:293-362
Aug. 1958 [in English]

The follow-up examinations of a series of 225 pulps capped on therapeutic grounds are reported. Of these, 221 had been exposed on the removal of softened carious dentin that had penetrated to the pulp, and 4 pulps already had been exposed on examination. In every instance there was hemorrhage.

Histologic and clinical examinations of the pulps of 81 teeth were made after control periods of from four hours to nine years.

Of 76 teeth in which no pulpitis had been demonstrable on capping, the outcome of the operation was judged to be satisfactory in 47 (about 62 per cent), uncertain in 8 and unsatisfactory in 14; in 7 teeth the results could not be assessed. Of the five teeth in which pulpitis had been demonstrable on capping, the results were considered to be uncertain in one of the teeth and unsatisfactory in four.

The outcome of the capping operation was considered to be satisfactory when the pulp lesion had healed and when little, if any, cellular infiltration was found deep in the region of the lesion. The reactive processes in the region of the lesion appeared on healing to be similar to those observed in an earlier study of the course of healing in dog and man (Nyborg, 1955). As in that study, the healing processes occurring in the present series resulted in a walling off of the pulp in the lesion region by a barrier of hard tissue containing a superficial necrotic layer. In a few teeth the barrier consisted locally only of a thin layer of loose, calcified argyrophil tissue. In the other teeth this layer was denser and continued toward the pulp

as immature lacunar dentin, against which canalized dentin was deposited—in some instances only locally.

In most of the barriers there were irregular spaces—empty or containing only debris. There were often concentrically stratified bodies, highly calcified and poor in collagen, *corpora amylacea*, and deep regions where argyrophil tissue dominated. These details were most clearly evident in the thicker barriers that extended deep into the pulp chamber. They may be interpreted as evidence of injury to the pulp inflicted prior to capping.

In teeth in which the lesion had not healed, and the pulp displayed chronic inflammation, if not total necrosis, the outcome of the capping operation was deemed unsatisfactory.

In many of the 80 teeth in which the coronal pulp could be studied histologically, the clinical observations were not in agreement with the corresponding histologic findings. With the clinical methods of examination used today, it can never be certain that a pulp capping operation will have a satisfactory outcome, even when a control period of many years is allowed. On the other hand, an unsatisfactory outcome, assessed on the basis of various clinical criteria, almost certainly would be confirmed by a histological examination.

The pulps of 144 teeth were subjected to clinical study only. In 124 pulps there had been no pulpitis on capping; in 20 pulps, pulpitis had been present. In 18 (about 14 per cent) of the 124 teeth with no pulpitis on capping, the outcome of the operation was unsatisfactory. Of the 20 teeth in which evidence of pulpitis had been observed on capping, the results were deemed unsatisfactory in 11.

Royal School of Dentistry, Stockholm, Sweden

Case reports

**Perithelioma of the parotid gland:
report of case**

N. del Bello and A. Carotenuto.
Rass.internat.clin.ter. 38:63-68
Aug. 1958

A 67 year old man with perithelioma (telangiectatic sarcoma) of the parotid gland was treated at the surgical clinic of the University of Naples, Italy.

Four years before admittance to the clinic, the patient had an undifferentiated tumor about the size of an almond excised from the region behind the right ear. The tumor had gradually increased in size during a three year period.

One year after excision, the tumor recurred. After extreme trauma, hemorrhage occurred because of a break in the continuity of the tumor. Immediate surgical enucleation was necessary.

Three years after the second excision the patient was admitted to the clinic. The recurrent tumor had increased to the size of a nut. There were no palpable lymph nodes in the involved region.

The tumor was excised again and found to extend deeply into the oral tissues. It was extremely vascular and bled freely during removal. The postoperative period was uneventful, and roentgenotherapy was applied to the gradually healing region.

Histopathologic examinations revealed the tumor to be a perithelioma of the parotid gland exhibiting irregular proliferations and containing closely packed pericytes.

Peritheliomas are prone to recur at the initial sites unless completely excised. Metastases, however, are not frequent. These tumors are extremely resistant to radium and roentgen irradiation. Radical total excision of the involved parotid gland is the method of choice.

Via S. Sebastiano 65, Naples, Italy

Mandibulofacial dysostosis

Miroslav Adam. *Českoslov.stomat.*
58:421-429 Dec. 1958

Mandibulofacial dysostosis, also called Franceschetti syndrome or Treacher-Collins syndrome, is a rare congenital malformation of the face and the jaw. The syndrome was first described by Franceschetti and Zwahlen in 1944.

This developmental anomaly may occur in a patient who otherwise is free from pathologic symptoms. The syndrome consists of hypoplasia of the facial bones (mainly the zygomatic arch and the lower jaw), an antimongoloid slanting of the palpebral fissures, deformity of the outer ear, macrostomia (resembling a transverse cleft lip) and a fishlike appearance of the face. Franceschetti and Zwahlen as well as Treacher and Collins assumed that the syndrome is a manifestation of a sex-linked recessive trait.

A 44 year old woman with a diagnosed mandibulofacial dysostosis was recently observed at the Second Dental Clinic of the University of Prague, Czechoslovakia.

The patient exhibited all characteristic symptoms with some deviations such as an extreme crowding of the lower anterior teeth which almost formed a second dental arch. The prognathic upper jaw produced an open bite in the anterior region. Both ears were imperfectly developed and the external meatus was absent.

The patient had been referred to the clinic for surgical repair of a "bilateral cleft lip." In fact, however, there was no cleft lip present but a bilateral macrostomia.

In the case reported, the hereditary character of mandibulofacial dysostosis could not be substantiated because the available family history, covering four generations, did not reveal the occurrence of the syndrome in any one of the patient's direct relatives.

Although there is no known treatment to obtain cure, gradual improvement was obtained by insertion of various orthodontic appliances (one of which was designed by the author). A more favorable occlusion, a better masticatory function and thereby a decrease in the patient's physical and psychic inhibitions were achieved.

Hradec Králové, Prague, Czechoslovakia



Dose: one spoonful

George Griffenhagen. *J.Am.Pharm.A.,Prac.Ed.*
20:202-204 April 1959

Although liquid medicines have been prescribed by the spoonful for hundreds of years, there is no official agreement to this day as to the capacity of a spoon.

Spoons have been in use as medicine measures for so long, and have become so firmly established in popular practice, that the spoon has become symbolic of liquid medication. In ancient Egypt there appears to have been little uniformity in the style, shape or size of spoons and there is no indication in the medical papyri that spoons were employed for measuring dosages of drugs. In ancient Greece and Rome, spoons made of bronze and silver began to assume an appearance which is today identified with the spoon.

The Greek word for spoon was *kochliarion* and the Latin term was *cochlear*, each deriving from the name of the shellfish *cochlea*. It is established that the spoon originated from the use of shells by primitive people. The spoonful of the Romans was equal to 144th of a *hemina* (about 9 fluid ounces); the slightly larger Greek *kochliarion* was equal to a little more than one fluid dram, or nearly the same capacity as the modern teaspoon.

The English word spoon originated from the Anglo-Saxon *spon*, meaning chip or splinter of wood, suggesting that the earliest spoons in northern Europe originated from the use of pieces of wood rather than of shells. However, *cochlear* was used in its original Latin form in many English documents, and for centuries the Scots referred to spoons as cockle-shells. During the Middle Ages spoons of bone, horn, crystal, wood and various metals such as pewter, latten and silver were in use, and records are numerous of the spoon as a measure. Culpeper (1653) and

Salmon (1691) loaded their translations of the *Pharmacopoeia Londinensis* with recommendations for taking "spoonful" doses of many liquid medicines.

Figure 1 shows (left) an early seventeenth century latten Apostle spoon, (center) a typical 17th century pewter spoon, and (right) an American tablespoon of 1799. Apostle spoons came into fashion in the 15th century and were prized gifts, handed down from generation to generation. It has been said that Apostle spoons, because of their sacred character, often were employed expressly for the administration of medicine.

With the introduction and acceptance of the popular patent medicines in the seventeenth century, the spoon became an accepted measure for medicines. With the introduction of tea as a beverage, the teaspoon was introduced late in the seventeenth century and became a common household implement. The larger spoon was renamed the tablespoon. It became increasingly recognized by authorities in Great Britain and the United States that measurement by the spoonful was not very accurate. Wood and Bache's *United States Dispensatory* of 1834 noted that "for the sake of convenience, and in the absence of proper instruments, we often make use of means of measurement which, though not precise nor uniform, afford results sufficiently accurate for ordinary purposes." Wood and Bache set the capacity of the teaspoon at "one fluidrachm" and the tablespoon at "half a fluid ounce." Griffith's *Universal Formulary* for 1850 protested that the capacity of the teaspoon "is rated too low; they apply very well to the teaspoonful formerly used but not to the much larger kind now in general use." The teaspoon had increased substantially in bowl size from 1730 to 1830.

Medicine spoons designed expressly for facilitating administration of liquid pharmaceuticals also were being developed. In England, G. Gibson introduced in 1828 his invention for a medicine spoon (Fig. 2, center). It consisted of a covered bowl with a hinged lid and a small opening at the tip. The handle was hollow for admission of air to facilitate delivery of the medicine. In 1852 I. C. Taylor obtained a patent in the United States for the spoon shown on the left in Figure 2, and Spencer designed the spoon shown



Figure 1 Left: Seventeenth century latten Apostle spoon. Center: Seventeenth century pewter spoon. Right: American tablespoon, 1799

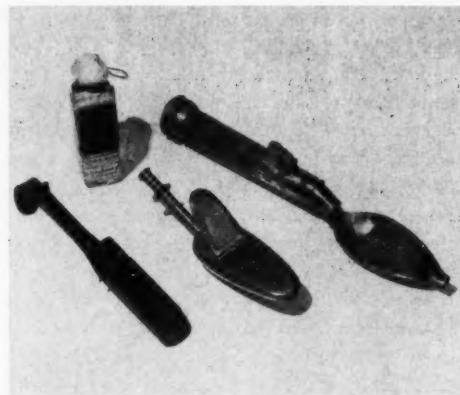


Figure 2 Nineteenth century medicine spoons. Left: Taylor, 1852. Center: Gibson, 1828. Right: Spencer, 1870



Figure 3 Graduated medicine spoons. Left: Ceramic spoon by Maw, London, 1873. Right: Glass spoon by Maris, Philadelphia, 1900

on the right in Figure 2. In 1873 in England, S. Maw, Son and Thompson introduced a porcelain graduated medicine spoon (Fig. 3, left) which was inscribed with lines on the interior of the bowl to designate teaspoon, dessertspoon and tablespoon measures. In 1879, Hagerty Brothers of New York City offered a similar graduated medicine spoon made of glass. A glass graduated spoon made by John M. Maris is shown on the right in Figure 3.

In 1902 the American Pharmaceutical Association called for the establishment of the teaspoon capacity at 5 cc., the dessertspoon at 10 cc. and the tablespoon at 15 cc., but its request was unheeded.

In 1956 the National Bureau of Standards defined three teaspoons as equal to one tablespoon or 4 fluid drams for household purposes, thereby making the teaspoon equal to 1½ fluid drams. If the National Bureau of Standards' conversion of 3.697 ml. for 1 fluid dram is used, the teaspoon capacity was set at 4.93 ml. In 1949, for house-

hold purposes, the American Standards Association adopted tolerances for the teaspoon of 4.93 cc. \pm 5 per cent. The Canadian Government Specifications Board in 1954 defined a teaspoon as containing 4.74 ml. The fifteenth revision of the *United States Pharmacopoeia*, which became official in 1955, reported that "agreement has not been reached with respect to a standard pharmacopeial teaspoon in spite of the need for such a standard measure in connection with compounding and labeling liquid medicines." It added that "in view of the almost universal practice of employing teaspoons ordinarily available in the household for the administration of medicine, the teaspoon may be regarded as representing 5 ml." Some commonly used texts, however, continue to give the teaspoon equivalent as 4 cc.

Thus the matter still remains unresolved. The ancient Greek *kochliarion* was the equivalent of 4.5 cc., exactly halfway between the controversial 4 and 5 cc. measure.

Smithsonian Institution, Washington, D.C.

Degeneration of the teeth

J.A.M.A. 168:2333 Dec. 27, 1958

Q.—Is there any beneficial effect of the combined use of estrogens and androgens for treatment of degeneration of teeth? Mainly, is such treatment as effective as in osteoporosis of senility in the laying down of new bony matrix?

A.—It is assumed that "degeneration of teeth" refers to the loss of supporting alveolar bone as is seen in periodontal disease. If this is so, there is no indication in the literature or elsewhere that the use of estrogens and androgens would be of any value in restoring the destroyed supporting bone.

535 North Dearborn Street, Chicago 10, Ill.

**Tuberculosis of the oral mucosa:
report of a unique case**

Maria Milodrowska. *Czas.stomat.* 11:733-738 Nov. 1958

Primary tuberculosis of the oral mucosa is extremely rare; oral tuberculosis is nearly always a secondary lesion and occurs in patients affected with advanced pulmonary tuberculosis.

An 11 year old boy showed tuberculous ulcers on the pharynx, tongue, hard and soft palate and the tonsils. Several partly healed lesions were observed on the inner side of the upper lip. The oral ulcers showed the characteristic picture of tubercles, composed of epithelioid cells, giant cells, multinucleated cells which were arranged at the periphery of the cytoplasm and surrounding small lymphocytes. The affected regions of the mouth appeared red, slightly raised and glossy. On pressure, yellowish patches appeared. There was painless swellings of the lymphatic nodes.

Mycobacterium tuberculosis was detected in direct smears taken from all oral ulcers.

During periodic dental examinations, the dental practitioner correctly diagnosed the disease as tuberculosis of the oral mucosa not associated with pulmonary tuberculosis, and referred the patient to the Dental Institute of the University of Gdansk, Poland, where, in association with the staff of the university's medical clinic, the treat-

ment was initiated. The treatment consisted mainly of oral doses of vitamin D₂ (150,000 units daily) combined with streptomycin and para-aminosalicylic acid (PAS) therapy. This treatment, with strict hygienic and dietary procedures, was continued for six months. The oral lesions were treated topically with a cream containing 20 per cent para-aminosalicylic acid.

Healing occurred uneventfully, and two years after termination of the treatment no symptoms of oral tuberculosis were observed.

Debinki 1, Gdansk, Poland

**Effect of supplemental vitamin therapy
on the limitation of incidence
of cleft lip and cleft palate in humans**

Herbert Conway. *Plast. & Reconstr. Surg.* 22:450-453 Nov. 1958

Of 196 mothers who had given birth to children with cleft lip or cleft palate in the years from 1946 through 1957 at The New York Hospital, 108 had no subsequent pregnancies, and 87 of the 196 had a total of 139 subsequent pregnancies.

Of the 87 mothers who had subsequent pregnancies, 53 had only one subsequent pregnancy, 23 had two subsequent pregnancies, 9 had three subsequent pregnancies, and 1 had five subsequent pregnancies.

Of the 87 mothers, 48 received no vitamin therapy. There were 78 subsequent pregnancies in this group, and five of the offspring (6.4 per cent) had congenital anomalies, as follows: one child with unilateral cleft lip; one child with unilateral cleft lip and congenital heart disease; two children with cleft lip and cleft palate, and one child with epilepsy.

Of the 87 mothers, 39 were given vitamin therapy during the first trimester of pregnancy. The therapy consisted of one multiple vitamin capsule daily by mouth, and 1 cc. of vitamin B complex given intramuscularly every other day. These 39 mothers had 59 subsequent pregnancies. None of the 59 infants was born with cleft lip or cleft palate.

525 East Sixty-eighth Street, New York 21, N.Y.

Operative dentistry

Modified diamond instruments for the treatment of carious and precarious fissuresD. J. Stewart. *Brit.D.J.* 106:73-76

Jan. 20, 1959

The task of the dentist who uses high-speed equipment may be aided by "Eastman Pattern" (Stewart and Stephens, 1956) diamond instruments. Modified Eastman Pattern instruments have been designed (Fig. 1) to avoid exposure of the pulp during cavity preparation in deciduous molars. The instruments have shoulders which bear on the tooth surface and limit the extent of penetration.

The earliest lesions of dental caries occur almost invariably in the pits and fissures of molars, the depths of the fissures lying almost entirely beyond the influence of the natural cleansing mechanisms of the oral cavity and the common practice of oral hygiene. One of the most logical and effective means to control caries is the method of "prophylactic odontotomy" advocated by T. P. Hyatt and others (1933). This is a technic for removing all pits and fissures before the onset of clinically recognizable caries. Because most of the excavation can take place within the enamel, cavity preparation can be carried out almost painlessly. But the preparation of a satisfactory cavity for the elimination of precarious fissures by operating within the confines of the enamel is not easily executed; the cavity must be deep enough to accommodate an adequate thickness of filling material and yet be maintained above the level of the dentinoenamel junction.

The first of the two new instruments has a cutting surface long enough to cut a cavity about 1.0 mm. deep. Figure 2, above, shows the outline of the instrument superimposed on a section of a molar. The shoulder limits the depth of penetration to within the enamel. Figure 2, below, shows the outline of an amalgam filling placed in a cavity prepared with instrument no. 1. In the

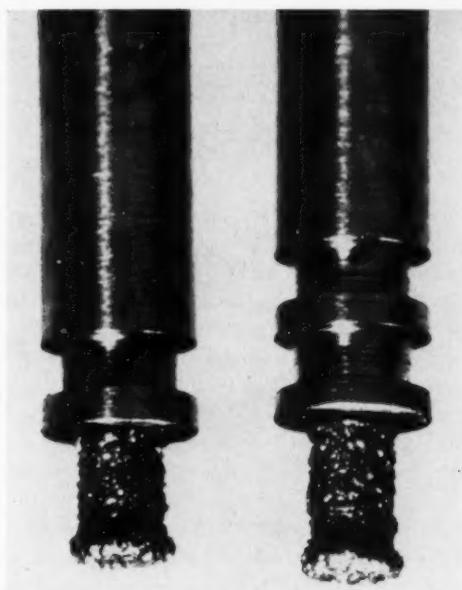


Figure 1 Depth-regulating shoulders and cutting surfaces of two instruments. Instrument no. 1 has a single groove cut in the shaft and instrument no. 2 has two grooves

process of cutting out a fissure, the shoulder guides the instrument in accordance with the enamel surface, so that the floor of the cavity is never quite flat but undulates in harmony with the external contour of the tooth. To counteract the tendency to "lift," the instrument is provided with a slight terminal flare, shaped so as to gain the maximum purchase on the tooth from a minimum increase in the diameter of the cutting surface. The flare maintains the instrument at a constant maximum depth and slightly undercuts the base of the cavity to provide secure retention for the amalgam.

Instrument no. 2 (Fig. 3) is for use in preparing cavities in the treatment of fissures which have suffered carious attack. It has features and dimensions similar to those of the first instrument, except that the cutting surface is somewhat longer so that when the instrument is operated at maximum depth it penetrates into the dentin at a point just beneath the enamel. Instrument no. 2 can be used to plane away all the enamel outlining the fissures to expose the underlying regions

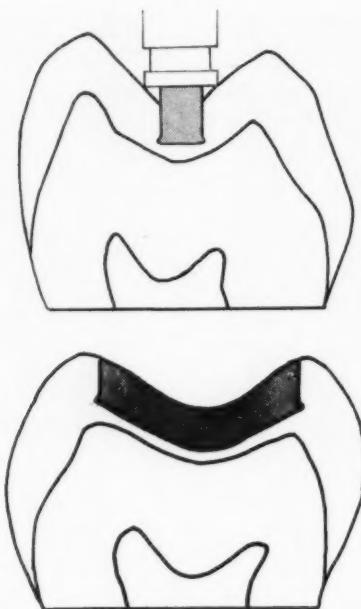


Figure 2 Above: Outline of instrument no. 1. Below: Outline in section of an amalgam filling placed in a cavity cut by instrument no. 1

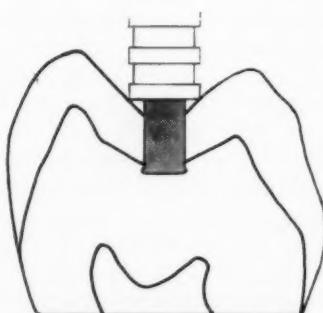


Figure 3 Outline of instrument no. 2

of carious dentin; this dentin subsequently is removed with conventional burs to complete the preparation of the cavity. The shoulder on instrument no. 2 prevents overpenetration and facilitates the rapid preparation and extension of this type of cavity with minimum interference with sound tooth substance.

The combined influence of the terminal flare

and the depth-regulating shoulder impart remarkable stability to the instruments in use.

When a cavity preparation is begun, initial penetration of the enamel should be achieved with a small diamond point or similar instrument. To use either of the two instruments for this initial penetration results in excessive wear of the terminal flare and shortens the effective life of the instruments. The new instruments are manufactured by The Diamond Precision Tools Ltd., London.

Eastman Dental Hospital, University of London, England

Effect of certain restorative materials on solubility of dentin

Marjorie L. Swartz and Ralph W. Phillips.
J.D.Res. 37:811-815 Sept.-Oct. 1958

Although it has been established that the solubility of intact and powdered enamel is reduced by silicates and resins which contain fluorides, the effect on dentin also may be important. The effect on dentin solubility of the following materials was determined: silicate cements (S. S. White filling porcelain, deTrey's cement, and Berylite); zinc phosphate cement (S. S. White zinc cement); resin cements (Kadon and FluorOn), and a number of experimental resin and zinc phosphate cements containing 2 per cent and 5 per cent concentrations of certain fluoride compounds. The procedures employed were similar to those used in the enamel studies made by the authors (1957).

The following conclusions were reached:

1. The solubility of dentin was reduced after contact with silicate cements. Those products which contained fluoride (S. S. White filling porcelain and deTrey's cement) produced a greater reduction than those which did not.
2. Resin restorative materials to which fluorides were added reduced dentin solubility.
3. Zinc phosphate cements, even those to which fluorides were added, did not reduce dentin solubility.

Indiana University School of Dentistry, Indianapolis, Ind.

Oncology**Salivary gland tumors:
management and results**

Gerald G. Garcelon. *A.M.A. Arch. Surg.*
78:12-16 Jan. 1959

A study was made of 329 patients with salivary gland tumors, who were admitted to the Massachusetts General and Pondville Hospitals in the ten year period from 1942 to 1951. One hundred and seventy-two of the 329 tumors were of the mixed variety. One of every five tumors of the parotid gland, and more than half of the tumors of the submaxillary gland were found to be carcinoma. Fifty-seven per cent of all tumors of salivary gland origin occurring in abnormal locations were carcinoma; these tumors were located almost exclusively in some portion of the oral cavity or upper respiratory tract. In this study, 17 patients had tumors of salivary gland origin arising in the palate, and 10 of these 17 had malignant lesions. Other sites affected were the cheek, tongue, lip, antrum, alveolus, orbit, epiglottis and lung.

The most effective treatment for mixed tumor and carcinoma of salivary gland origin occurring in abnormal locations is radical local extirpation. Of 12 patients with mixed tumor in abnormal locations, 8 were free of recurrence for five or more years after surgical removal. Of 20 patients with carcinoma of salivary gland origin in abnormal locations, 7 (35 per cent) were living and free of disease for five or more years after surgical extirpation.

In this series of 149 patients with mixed tumor of the parotid gland, 27 (18 per cent) had had one or more previous operations. Enucleation of mixed tumor of the parotid gland invites the possibility of recurrence. The most successful treatment appears to be a complete removal of the tumor with as generous a portion of the parotid gland as the situation permits. To minimize the possibility of facial nerve injury, the operative procedure must include a dissection of the nerve

trunk and its major branches. Of 69 patients with primary mixed tumor of the parotid gland who were treated and followed for from 5 to 15 years, 42 were subjected to radical excision with exposure and dissection of the seventh nerve; in no patient did tumor recur, and only one patient developed minimal weakness of the mandibular branch of the facial nerve. Twenty patients with small and superficial tumors were treated by partial parotidectomy, and there were no recurrences and no patient in this group developed facial paralysis. Of seven patients in whom the mixed tumor was simply enucleated, there was a recurrence in one patient and a complete seventh nerve paralysis in another.

Of 53 patients with carcinoma of the parotid gland, 12 (23 per cent) had a history of one or more previous excisions of a benign mixed tumor. Nine of the 53 patients with carcinoma of the parotid gland were free of disease five years after operation, and eight of these nine patients had lesions confined to the parotid gland, permitting radical excision.

Mixed tumors of the submaxillary gland offer no problem in management. Total excision of the involved gland results in no disability and there is little danger of major nerve injury. Of 25 patients with carcinoma of the submaxillary gland, 5 were alive and free of disease five years after operation. Radical neck dissection is the most successful initial treatment for this disease.

Nearly a quarter of the patients with carcinoma of the parotid and submaxillary glands seen at the two hospitals had advanced, inoperable disease. Recently, it has been found that malignant tumors of salivary gland origin may be influenced favorably either by hormones or by a combination of hormones and roentgenotherapy. Irradiation in the form of deep roentgenotherapy affords palliation for varying periods in about 50 per cent of the patients with advanced cancer of the salivary glands.

701 Washington Street, Newtonville, Mass.

Oral surgery**A method of sialography**

Ake Gullmo and Gun Böök-Hederström.
Acta radiol. 49:17-24 Jan. 1958 [in English]

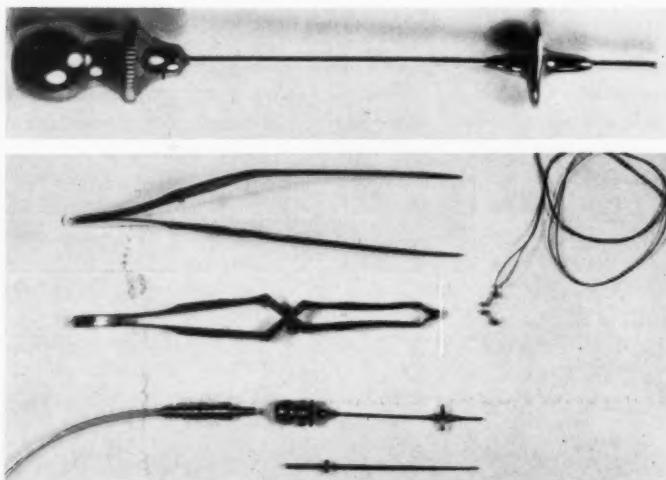
Sialography was introduced simultaneously and independently by Barsony (1925), Uslenghi (1925) and Carlsten (1926), a contrast medium of high viscosity being used. Generally, the contrast medium has been injected through a cannula with a blunt end. In some patients, heavy contrast filling of the parenchyma results and the patients complain of severe pain and swelling of the gland. The small ducts become plugged and the outflow of saliva is impaired for a considerable time by the injection of an oily contrast medium.

A new sialographic method, described by the authors, eliminates leakage into the oral cavity, parenchymatous filling of the gland and impairment of the gland's function. The cannula and other instruments required are shown in the illustration. For probing and slight dilatation of the oral end of the duct, a lachrymal canal probe of silver should be used. It should be pointed but not sharp.

The location of Stensen's duct usually offers no difficulty, the orifice being found opposite the second bicuspid or first molar. It is unnecessary to stimulate the flow of saliva with lemon juice. The probe is held ready in one hand and the gland is compressed to cause a flow of saliva from the orifice of the duct.

The orifice of the submaxillary duct is more easily found if the caruncle is held with fixation forceps. When the cannula has been introduced, a clip is placed around the cannula and secured to the buccal mucosa or in the frenulum under the tongue, depending on the type of gland to be examined. When the cannula is introduced into the submaxillary duct, a finger should be placed under the patient's chin and the floor of the mouth pressed upwards in order to facilitate securing the clip onto the frenulum. Patients experience surprisingly little discomfort from the procedure and only at the moment of securing the clip may feel momentary sharp pain. No form of anesthesia is required.

When the cannula has been fixed in position, saliva usually will flow through it spontaneously; if not, the gland again should be palpated until saliva emerges and the cannula is clear of air bubbles. A polythene tube filled with a water-soluble contrast medium of high concentration (Urograin or Hypaque, 60 per cent or more), free from any air bubbles, is attached to the cannula. The other end is raised. The flow of contrast medium occurs as an effect of ordinary hydrostatic pressure.



*Special cannula
and other instruments
needed for
sialography*

The cannula is apt to stay in close contact with the wall of the duct and thus create an obstacle to the passage of the contrast medium; this may be eliminated if slight traction is exerted on the cannula or, in examination of a parotid gland, the corner of the mouth. Furthermore, by a change in the position of the cannula in the duct, the flow of the medium can be controlled or interrupted. When about 1 ml. of the medium has been introduced, the speed of the inflow diminishes and the patient experiences a slight sensation of fullness in the gland. The roentgenographic exposures then are made. Anteroposterior projections always should be obtained in order to evaluate any displacement of the ducts. A satisfactory view of the posterior parotid ducts is obtained if the chin is tilted about 15 degrees upward in the lateral projection.

This technic consistently obtains optimal filling of the parotid and submaxillary ducts. The pressure used for the injection is only slightly higher than the secretory pressure. Parenchymatous filling with "blurring" never occurs.

University Hospital of Lund, Sweden

Bone graft substitutes— a progress review of anatomy

Melvin L. Moss. *New York State D.J.*
24:353-354 Oct. 1958

Anatomical research dealing with osteogenesis and bone graft substitutes has been active and fruitful during the past year. Although autogenous and homogenous bone grafts have proved efficacious to meet various needs in medical practice, the clinical problems usually confronting the dentist are not of a nature to warrant either the expense or the trauma associated with the placement of these materials.

Several bone graft substitutes have recently been proposed, which theoretically offer ease of application and low cost combined with some of the advantages associated with the usual bone graft. Among the bone graft substitutes proposed are "anorganic bone" (ethylenediamine extracted bone, in which little organic matrix remains), "despecciated bovine bone" (a nonvital bovine bone in the form of paste or of larger pieces, usually stored in homologous plasma or

in saline), and polyvinyl sponge, a synthetic preparation.

All of these materials are inert; but although well tolerated, they do not either stimulate or induce osteogenesis in the host. To varying degrees they supply a matrix into which the host tissues can grow; as such, they accelerate the first stages of wound healing. Restoration of morphologic contour has been questionable. Apparently, it is easy to produce almost any degree of temporary restoration, but the long-range preservation of this artificial contour is another matter; none of the substitute materials has unequivocally demonstrated this ability as yet.

A serious problem is the eventual removal of these essentially foreign substances. Their inertness, which at first sight is beneficial, apparently contributes to the morphologic retention of these bone substitutes in the implant sites for prolonged periods of time. A second problem implicit in the use of these substances is that there is no assurance at present that the amount of bone eventually restored in these regions is any greater than that which would occur in an untreated control.

Combination of an osteogenic inductor factor (Moss, 1958) with an inert matrix which offers easy access to the ingrowing host tissues and is itself easily absorbable (absorbable gelatin sponge has proved successful) may offer some hope for future clinical studies.

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The evolution of plastic surgery

Alma Dea Morani.
Tr. & Stud., Col. Physicians, Philadelphia
26:84-88 Aug. 1958

Plastic surgery as a specialty hardly existed before World War I, when the need for skillful repair of maxillofacial injuries focused attention on it. Although plastic surgery has been practiced from very early times in various parts of the world, its progress has been strangely intermittent. For long periods this surgical art has been neglected and knowledge of its principles and techniques almost forgotten; yet at intervals there has been a renewal of interest.

The earliest recorded development occurred in

India about 2000 B.C. when Hindu surgeons began crude attempts to repair various mutilations practiced on criminals, prisoners, unfaithful wives and enemies. Nasal reconstruction utilizing a flap from the cheek was described by Sushruta (about 750 B.C.); he also described a method of repairing injured lips by means of cheek flaps.

The first European to mention plastic operations was Aulus Cornelius Celsus (53 B.C.-7 A.D.); he gave detailed accounts of many techniques for repairing loss of tissue of the nose, lips or ears. Justinian II (669-711 A.D.), Roman emperor, was so harsh a ruler that his subjects cut off his nose and sent him into exile. When he recaptured the throne, he demanded a nasal reconstruction. In Venice is a marble bust of Justinian showing him with a new nose which evidently had been constructed from a forehead flap.

The whole art of facial reconstruction disappeared from recorded history for more than 700 years. When it reappeared, it was a secret in the hands of a family of surgeons practicing in Italy—the Branca family of Sicily.

The man who may be regarded as the founder of modern plastic surgery is Gasparo Tagliacozzi (1546-1599), professor of surgery at the University of Bologna. Tagliacozzi devised many plastic operations and in 1597 wrote the first systematic treatise on plastic surgery, *De Curtorum Chirurgia per Insitionem*.

Other pioneers who contributed to the evolution of plastic surgery were Johann Friedrich Dieffenbach, (1792-1847); J. Mason Warren (1811-1867); John Peter Mettauer (1787-1857) who contributed to surgical treatment of cleft palate; Thomas D. Mütter (1811-1859); J. L. Reverdin (1842-1929); E. L. Olier (1825-1900); Karl Thiersch (1822-1895); John Reisberg Wolfe (1824-1904), and Fedor Krause (1857-1937).

With World War I came the beginning of a new epoch in this specialty; surgeons of the Allied Forces early recognized the desirability of training surgeons in the treatment of various maxillo-facial wounds. Both Britain and the United States ordered general surgeons, oral surgeons, dental surgeons, rhinologists, ophthalmologists and neurosurgeons to form teams that could develop the field of plastic surgery. Plastic surgery was

fathered by specialists in all the most intricate and difficult forms of head surgery.

As recently as 1916 no separate department of plastic surgery existed in any medical school or hospital in America; today, however, there are departments of plastic surgery in the majority of medical schools and large hospitals.

With the advent of World War II, many plastic surgeons were available and the importance of their work was recognized. In England, nine centers for repair of maxillofacial defects were created, largely through the direction of Sir Harold Gillies. In the United States, six of the army's large general hospitals were designated for soldiers requiring plastic surgery.

The principles and art of plastic surgery are used today by reconstructive surgeons who are capable of invading every region of the human body. Among the great surgical figures involved are Vilray P. Blair, John Staige Davis, Victor Vean, and Robert H. Ivy. Advances in general surgery have helped make possible many plastic procedures previously unsuccessful. There are many indications that the scope of plastic surgery today is so wide that the transplantation of entire organs or parts soon will become possible.

Tagliacozzi in 1570 wrote: "We restore, repair and make whole those parts which nature hath given, but which fortune hath taken away, not so much that they may delight the eye, but that they may buoy up the spirit and help the mind of the afflicted."

Woman's Medical College of Pennsylvania, Philadelphia 29, Pa.

Diagnosis and treatment of glossopharyngeal neuralgia

R. Ulik. *Deut.Zahn Mund Kieferhk.* 26:460-462 Sept. 1957

Glossopharyngeal neuralgia resembles in symptomatology the true trigeminal neuralgia but differs in the region of involvement. Paroxysms of pain occur along the distribution of the ninth cranial nerve, unilaterally at the base of the tongue, in the throat and the ganglions of the glossopharyngeal nerve and reach to the back of one ear. Sneezing and coughing frequently initiate glossopharyngeal neuralgia, and in isolated

instances it is sometimes possible to demonstrate the "trigger zone."

Diagnosis of glossopharyngeal neuralgia can be confirmed if sudden relief is obtainable by staining the tonsillar region with a cocaine solution.

The treatment used in other types of neuralgia, alcohol nerve injections, is contraindicated because of the deep anatomic position of the glossopharyngeal nerve.

At the dental department of the First Surgical Clinic of the University of Vienna, Austria, in instances of severe glossopharyngeal neuralgia an extracranial section of the glossopharyngeal nerve through the posterior fossa is performed.

The procedure is as follows: (1) an incision is made below the angle of the jaw to open and expose the platysma muscle; (2) the submaxillary gland is disengaged from its surroundings and turned posteriorly; (3) the posterior digastric muscle is elevated and the size of the ascending ramus of the styloid process is determined by palpation; (4) a broad stria of musculature consisting of the stylopharyngeal, stylohyoid and styloglossus muscles is exposed between the styloid process and the digastric muscle; (5) the strand of muscular fibers is carefully elevated and the glossopharyngeal nerve exposed, and (6) the nerve then is clamped with Thiersch's forceps and one part of the nerve is excised above and below.

Suturing and postoperative care follow customary procedures.

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A new classification for cleft lip and cleft palate

Desmond A. Kernahan and Richard B. Stark.
Plast. & Reconstr. Surg. 22:435-441 Nov. 1958

Although many classifications for cleft lip and cleft palate have been proposed, in the English-speaking world the classification suggested by Ritchie and Davis (1922) has gained general acceptance. It is an anatomical classification which uses the alveolar process as a line of division between lip and palate anomalies. This classification, however, has not stood the test of time, in the light of subsequent advances in embryology and in surgery.

It is held now that there are no true facial processes involved as described by His, but rather a series of ectodermal grooves separating masses of mesoderm. These masses grow differentially, penetrate, and obliterate the grooves to form the primary nasal septum, prolabium and premaxilla. Normal development of this region (the composite parts of which are termed collectively the "primary palate") depends on the successful penetration of mesoderm from three masses, two placed laterally and one medially. The primary palate extends as far posterior as the incisive foramen; its development is completed by the seventh week of intra-uterine life. From this primary palate are formed subsequently the central portion of the upper lip and the premaxilla. Failure of this mesodermal penetration leads to breakdown of the ectoderm and formation of clefts.

From one to five weeks later (that is, between 7 and 12 weeks of intra-uterine life), formation of the secondary palate (hard and soft palate) occurs through the growth medially and the fusion of two laterally placed palatal shelves.

The time has come to adopt a new classification for cleft lip and cleft palate, one which avails itself of anatomic exactitude, newer concepts of the development of the center of the face, recent advances in the surgical correction of these defects, and a classification which will be of value in future application for the prevention of such conditions.

In the new classification the incisive foramen, not the alveolus, becomes the dividing point between the different groups of deformities. Three distinct groups are proposed, as follows: (1) clefts lying anterior to the incisive foramen, that is, clefts occurring in the primary palate as a result of failure of proper mesodermal penetration; this group would include deformities from minor cleft lip to clefts of the whole premaxilla; (2) clefts lying posterior to the incisive foramen, that is, those due to a failure of the fusion of the two palatal processes to form the secondary palate, and (3) clefts which combine these two important embryological events, that is, failure of normal development of both the primary and the secondary palate.

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Roentgenology

The rational use of x-ray in medicine and dentistry with particular regard to protective measures

A. Bradley Soule, Jr., Hans Heilbronn and Ralph Bannister. *J. Maine M.A.* 49:125-134, 161 April 1958

Although radiation research committees in the United States and Great Britain stress the fact that necessary medical and dental dose rates should not be included in computation of the maximum permissible dose of any individual, there is a responsibility on the part of the attending physician, dentist and roentgenologist to establish new standards for the use of x-ray and radioactive materials so that these valuable agents will be used in the most effective and yet the safest possible ways. Each practitioner must scrutinize his own roentgenologic experience, use the protective devices available, and arrange for the instruction of technical personnel in carrying out those procedures which seem desirable for the added protection of patients.

If it is assumed that during the first 18 years of life an individual should receive no more than 5 rems (roentgen-equivalent-man) to his or her gonads, as long as that person is well every effort should be exerted to protect him against exposure to roentgen rays other than those required to maintain health. The practitioner should be especially sparing of radiation to the embryo and unborn fetus, the infant and young child.

Although every effort should be exerted to keep the dose of radiation at the lowest possible level to people who are well, this principle should be no deterrent to the use of roentgen rays in detecting and identifying disease processes in patients who are ill, provided that this is done by those who are trained and experienced in making such examinations. The theoretical dangers of

damage to future generations must be balanced against the more immediate dangers of failing to identify a serious disease process, especially when the roentgenography involves use of an amount of radiation that is within safe limits.

In roentgenographic examinations, the following principles should guide those concerned:

1. All roentgenographic examinations should be made by persons trained and experienced in the type of examination being performed, whether it be a dental roentgenographic study by a dentist or hygienist or a complex examination such as is involved in myelography or aortography by a team of workers.

2. All equipment used should be modern, shockproof and ray-proof. Both equipment and installation should meet National Bureau of Standards requirements with proper shielding of walls, floors, ceilings and control booths. All x-ray tubes should be fitted with proper filters, diaphragms and collimators or cones. The National Bureau of Standards Handbook 60, entitled *X-ray Protection*, should be used as a bible in checking all conditions.

3. The field of radiation should be limited to that region under need of study. Other parts of the body should be excluded from exposure by diaphragms and collimators or cones and often by the use of lead or lead rubber. Screening should be used with special care with young children who are so small that the entire body or a large fraction thereof can be included inadvertently in the beam in making an examination of an isolated part such as the skull. A limit should be placed on the number of exposures for every examination, and extreme effort should be made to get a diagnostic roentgenogram the first time.

4. Little tricks to reduce radiation risk—such as proper dark adaptation before beginning the examination, use of a high kilovoltage-low milliamperage current, use of small fields, rotation of the patient to alter entrance ports, off-and-on exposures to make the most of brief glimpses, and the use of lead rubber to protect that patient's gonads—can be acquired by training and experience. In the room, personnel other than the patient should be kept at a minimum, should avoid exposure by the primary beam and should be so

placed that exposure to secondary radiation is avoided or minimized. All should wear lead aprons or similar protective material.

5. Technicians, in performing roentgenographic examinations, should make all exposures from lead-lined booths or from behind lead screens. They should never expose themselves to direct or indirect radiation by holding children or dental films.

6. Some type of monitoring system, such as film badges or dosimeters, is desirable for use by all who may be subject to exposure.

7. Routine pre-employment physical examinations should be performed on all personnel, and should include a history of previous employment in any capacity where radiation exposure might have been received, or of any unusual exposure to either diagnostic or therapeutic radiation in the past.

A double hazard exists in dental offices—an occupational hazard for those working with or near dental x-ray machines and the more direct hazard to the patient. Etter and others (1956) found that, by use of high kilovoltage, low milliamperage-second technics, long cones and added cut-out lead diaphragm with 2 mm. aluminum filters, and by using the fastest available film, the radiation dose can be reduced to a value which presents little or no hazard to patients and personnel. A lead-rubber bib or apron should be used to cover the shoulders, chest and pelvis of the patient during the examination.

"Routine" full-mouth dental examinations should be restricted to instances required by definite dental indications, and children should be examined with even greater caution than adults. It seems advisable that in adults, routine full-mouth examinations should be performed not oftener than once in four or five years unless specific dental indications require more frequent studies. Single roentgenograms of isolated diseased teeth might be made with greater frequency.

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Cavernous hemangioma of the jaws: treatment in infants

Simone Laborde. *Acta radiol., Stockholm*
28:723-734 July 1958 [in French]

Cavernous hemangioma of the jaws is rare; only 28 definite case reports have appeared in the literature.

Three infants, between two and four months old, were observed and treated at the Dental Institute of the University of Paris.

At birth and in the early stages no abnormal development was noted but later a slow expansion of the jaws (in one instance the upper jaw, and in two the lower jaw) occurred associated with severe pain, probably from pressure on nerve filaments. Hemangioma of the oral cavity is extremely serious and surgical removal may have a fatal termination. Roentgenotherapy was, therefore, the method of choice.

After roentgenographic examination, in each instance a small puncture was made in the bicuspid region of the involved jaw for biopsy. The following day, hemorrhage occurred during changing of the dressing, but was checked without difficulty.

Deep roentgenotherapy was applied in two patients, and removable radium pearls were inserted in the third. Minimal doses proved adequate because hemangioma is very sensitive to radium or roentgen rays. By use of these small doses, complications such as actinic ulcerations, disturbances of growth of the jaws, delay in tooth eruption and trauma to oral tissues were avoided. The minimal doses were repeated at intervals of from three to four months. In all three patients, the lesions regressed for a few months but it took from two to five years to obtain complete healing.

The results have been satisfactory, from both the curative and the esthetic points of view.

In these three instances, the hemangiomas were not true tumors but congenital malformations associated with portwine birthmarks.

Service d'Orthopédie dento-faciale de l'Institut de Stomatologie, Paris 6, France

Prosthetic dentistry

**Immediate lower dentures
in theory and practice**

Anton Hromatka. *Deut.zahnärztl.Zschr.*
12:1444-1450 Nov. 1, 1957

The reluctance of patients to submit to multiple tooth extraction and to insertion of complete dentures is a problem often encountered in dental practice. The more imperative the indication for complete dentures may be, the more important it is for the dentist to analyze the patient's objections and if possible to dispel them.

The main difficulty usually can be traced to two factors: (1) the patient's recognition that edentulous people often show impairment of facial contour and individual expression, and (2) the patient's aversion to be forced to remain in an embarrassing edentulous condition for a comparatively long period.

Immediate dentures, inserted after multiple tooth extraction, seem to solve this problem effectively. The esthetic appearance of the face, the

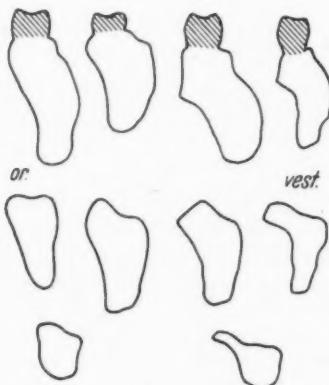


Figure 1 Resorption of the mandible in the molar region. Or: oral. Vest: vestibular

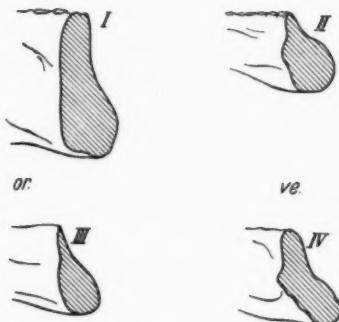


Figure 2 Sagittal slice of the mandible in the molar region

main requirement of most patients, can be reproduced and in many instances it even can be improved on.

Although the construction of immediate dentures has been practiced, to a limited extent, for almost 100 years, this prosthetic service has gained greatly in popularity only during the last decade. Immediate dentures provide many advantages for certain types of patients; there are, however, many patients in whom their insertion is contraindicated. In this category belong patients of advanced age or with lowered resistance for whom even the suggestion of multiple tooth extraction constitutes a psychologic shock. There are also patients in whom the surgical reduction of the alveolar bone in preparation for reception of an immediate denture is beyond the limit of tolerance. Immediate dentures also are contraindicated for patients with diabetes, tuberculosis or other systemic diseases.

To be effective, an immediate lower denture must permit the patient to retain the following functions: (1) mastication; (2) deglutition, and (3) speech. Furthermore, it should allow a harmonious interrelation of all oral tissues.

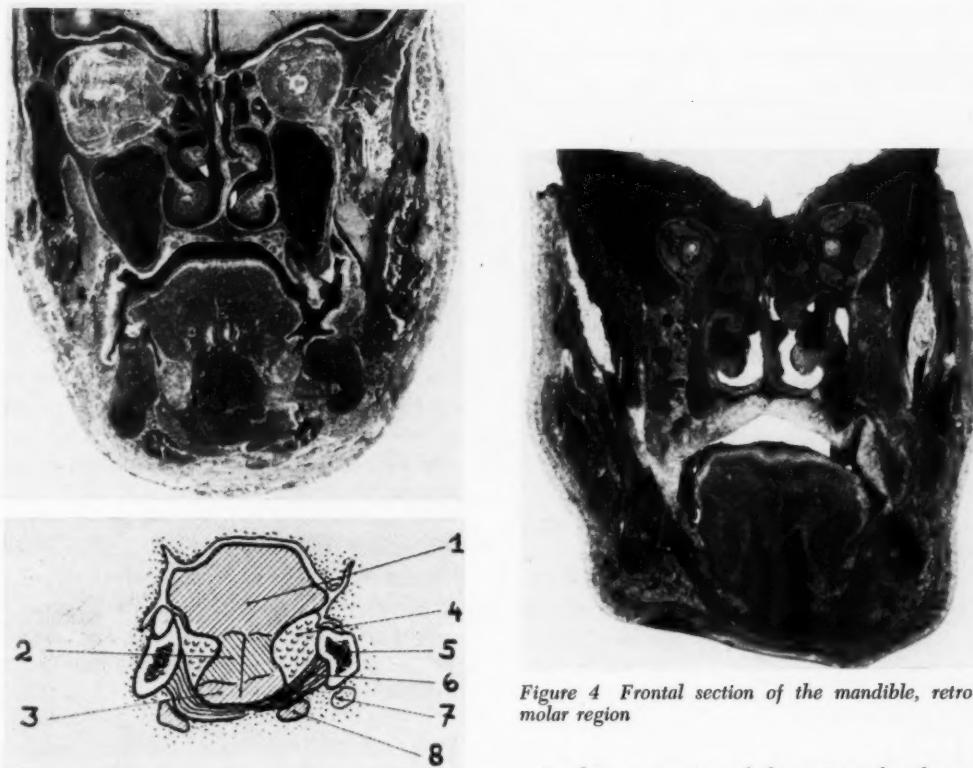


Figure 3 Above: Frontal section of the mandible. Below: Molar region. 1, tongue. 2, genioglossus muscle. 3, hyoglossus muscle. 4, sublingual gland. 5, mandible. 6, mylohyoideus muscle. 7, submandibular gland. 8, pterygoideus medialis muscle

Figure 4 Frontal section of the mandible, retro-molar region

In the preparation of the patient for the insertion of an immediate lower denture, the value of patient education cannot be overemphasized because the patient's full cooperation before, during and after insertion of an immediate lower denture is an important factor in attaining success.

The dentist, however, must recognize that success cannot be obtained by concentrating on one seemingly important phase in construction of an immediate lower denture and neglecting other phases. The significance of other factors involved such as the anatomic formation of the mandible, the presence of resorption in the alveolar process, usually in the molar region, or of an exostosis on the inner part of the mandible must be realized.

The greatest reward for the dentist after insertion of a well-fitting immediate lower denture will be the happiness and satisfaction of his patient, and the recognition that he had made a major contribution toward the comfort and oral health of the patient.

Pirchlstrasse 3, Kitzbühel, Austria

A practical mandibular anterior pontic

Wilfred D. Whiteside. *J.Pros.Den.* 9:119-120
Jan.-Feb. 1959

Hygiene and esthetics are major problems in the construction of lower anterior fixed partial dentures. These problems may be solved by using Steele's interchangeable facings made of porcelain fused to gold.

A pontic of this design has the following advantages:

1. The gingival portion is shaped like the tapering end of an egg, a form ideal for both lower posterior and lower anterior pontics.
2. The porcelain is supported by metal placed at right angles to the occlusal forces which are exerted on it.
3. The facing is replaceable.
4. The pontic is economically and easily fabricated.

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Odonto-neuralgia-sympatheticus

C. J. Griffin. *Austral.D.J.* 3:262-264 Aug. 1958

A 39 year old edentulous woman, on whom a total hysterectomy had been performed 54 months earlier, was seen at a hospital dental clinic. Gross loss of vertical dimension, loss of chin-nose distance due to alveolar absorption beneath her dentures, and limited mobility of the right arm were observed.

The patient was examined at a clinical meeting. It was considered that the limitation of arm movement, unless it was psychological, was organic. The patient exhibited pain reactions when the mucosa overlying the right maxillary tuberosity and mucosa posteroinferior to the left mylohyoid ridge were lightly stroked with the dentist's finger. Pain reactions also were elicited over the right temporomandibular joint when light pressure was applied half an inch anterior to the tragus. Pain reactions were not elicited by the same procedure applied to the mucosa and the temporomandibular joint of the opposite side, but pain reaction could be elicited in the patient by palpation of the right shoulder.

The mucosa overlying the maxillary right cuspid region was anesthetized with 1 cc. lidocaine hydrochloride 2 per cent. There was no effect on right arm mobility.

The origin of the medial pterygoid muscle was anesthetized with the same solution, with no effect on right arm mobility.

The insertion of the medial pterygoid muscle then was anesthetized with lidocaine. About one minute later there was complete freedom of arm movement.

If the above procedure was reversed, that is, if the point of insertion of the medial pterygoid muscle was anesthetized, there was limitation of arm movement. It is evident that both the origin and insertion of the medial pterygoid muscle had to be anesthetized before freedom of arm movement occurred.

The limitation of arm movement corresponded with inhibition of rotation of the shoulder joint; the probability is that the tonus of the antagonistic muscles to this movement was not released.

Roentgenograms of the temporomandibular joints showed that the right temporomandibular joint was in retroposition.

New dentures were constructed and inserted. When the patient was seen five days later, she had complete freedom of arm movement.

The only suggestion offered to explain this condition, other than that propounded by the author, was that the condition might be psychological. A psychiatrist who examined the patient reported her emotionally stable.

The arm condition, it is believed, was due to reflex vascular disturbances at the shoulder joint. The tonus of the antagonistic muscles was increased by failure of release of vasoconstrictor tone. Undoubtedly the origin and insertion of the medial pterygoid muscle were involved, and this muscle was impinged on during overclosure. In this instance, the reflex vascular disturbance involved the shoulder joint; however, more vital structures might be affected by this condition. The condition somewhat resembled intermittent claudication, since any exercise of the arm could not be endured longer than a few seconds. Pain was not a prominent feature.

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**Caries, periodontal disease
and malocclusion
in children entering the public schools
in Jena, Germany**

Edmund Bredy. *Zahnärztl. Praxis* 9:174-175
Aug. 1, 1958

Prior to the school year 1957, all children entering the public schools in Jena, Germany, underwent a compulsory dental examination which had been initiated by the school authorities to obtain statistical data on the frequency of caries, periodontal disease and malocclusion.

Some 913 children (450 boys and 463 girls) from 11 public schools were examined by school dentists. Carious lesions were found in 429 boys and 421 girls (in 2,668 deciduous and in 413 permanent teeth). There were 1,628 filled deciduous and 213 filled permanent teeth. Missing because of extraction were 928 deciduous and 4 permanent teeth.

Malocclusion (close bite and open bite) was present (untreated) in 203 boys and 220 girls.

Periodontal disease (mainly marginal periodontitis) was observed in 383 boys and 433 girls.

Premature tooth eruption occurred in 32 children, and delayed tooth eruption in 125.

Tooth deformities due to thumbsucking were observed in 60 children and those due to rickets, in 3.

Prognathism occurred in 52 children; supernumerary teeth in 2, and abnormally large interproximal spaces in 12.

The results of the serial examinations led to the conclusion that school dental service alone cannot cope with this problem. Preventive procedures must be initiated even before the children enter kindergarten, and proper dental, especially orthodontic, treatment initiated at the earliest possible time.

Saalbahnhofstrasse 12a, Jena, Germany

Milk and dental decay

William Bolton. *Today's Health* 36:4 Dec. 1958

Q.—I have heard that bacteria in milk create lactic acid, which causes erosion and decay of tooth enamel. Does this mean it is dangerous for human beings, particularly adults, to drink milk?

A.—Bacteria, called lactobacilli, are present in milk, and there are enormous amounts in buttermilk and acidophilus milk. In fresh milk, lactobacilli appear as accidental contaminants, and when they flourish the milk becomes sour.

Lactobacilli are associated with caries, but there is not enough evidence to say they cause it. Many other bacteria in the mouth produce acid far more rapidly than do lactobacilli. These acid-forming bacteria quickly turn sugar and other carbohydrate residues into acid, which dissolves tooth enamel and contributes to the formation of cavities.

If the diet is low in carbohydrates and if the teeth are brushed after eating, the acid-forming bacteria will have practically no material from which to make acid.

The nutritive value of milk is extremely high and it is important, even for adults, to consume milk as part of a well-rounded diet. The number of lactobacilli in fresh pasteurized milk is remarkably low.

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**The chemistry of the tooth surface
and its relation
to dental caries susceptibility—
combined with—fluorides and dental health**

J. F. Volker. *J.D.Med.* 13:179-186
Oct. 1958

Dental caries begins on the tooth surface and involves the degradation of carbohydrates by microorganisms of the plaques and the subsequent chemical alteration of the surface enamel. A major effort has been made to discover agents that inhibit acid production by microbial enzymes. Several agents, including penicillin and sodium lauroyl sarcosinate, combine with dental plaques and inhibit the ability of these enzyme systems to produce organic acids.

Decalcification of the enamel surface by organic acids is minimized when the oral environment is saturated with calcium and phosphate ions. This mechanism would seem to explain the reported ability of 2 per cent dicalcium phosphate, added to certain foodstuffs as part of a school diet program, to inhibit dental caries in children.

In addition to inhibition of acid production by plaque organisms and minimization of enamel decalcification by appropriate buffer action, caries prevention would seem possible by alteration of the physical and chemical properties of the enamel surface. Although the inorganic material of the enamel makes up by far the greater fraction, a group of investigators has concentrated its efforts on modification of the organic material in the enamel. These investigators assert that the initial disease mechanism of caries is proteolysis and that demineralization is secondary. This reasoning has been the basis for impregnating tooth surfaces with ammoniacal silver nitrate, zinc chloride or potassium ferrocyanide solutions. Despite extravagant claims for these procedures, the evidence is essentially negative.

Topical applications of fluoride to the enamel result in a combination of the fluoride with the tooth surface in such a way that the enamel resists decalcification. This principle may explain the claimed ability of dentifrices containing stannous fluoride to reduce caries in humans. Russian investigators have claimed that the semi-annual application of 75 per cent fluoride paste to first permanent molars over a three-year period has resulted in a caries incidence of 0.75 per cent in those teeth, a control group having a caries incidence of 30 per cent in the first permanent molars. There is need for research to confirm or disprove this claim.

There is evidence that the enamel surface undergoes early and continuing maturation changes which may modify caries susceptibility.

It was recently observed that palmitoyl sarcosinate also may combine with enamel and reduce its solubility to a degree comparable to that accomplished with sodium fluoride solutions. This reaction is thermosensitive, being effective at 38°C. but ineffective at 25°C.

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Idiopathic enamel spots

Jürg Allemann. *Schweiz.Mschr.Zahnhk.*
68:1003-1021 Nov. 1958

The spots on teeth occurring in dental fluorosis, resulting from the continuous ingestion of excessive amounts of fluoride in drinking water and foodstuffs during the period of the calcification of enamel, must be distinguished from the idiopathic enamel spots, because the latter are of spontaneous origin and of unknown causation; they are neither sympathetic nor traumatic and have no relation to the intake of fluoride.

About 900 school children, residing in Swiss regions in which the drinking water is poor in fluoride (from 0.2 to 0.3 ppm), were examined at the Dental Institute of the University of Bern, Switzerland.

In the teeth of these children, from 9 to 15 years old, idiopathic "white" spots were found in 5.8 per cent. The following causative factors are suggested: (1) whooping cough; (2) severe gastrointestinal disturbances and (3) acute or chronic bronchitis.

These idiopathic enamel spots can be easily differentiated from both mottled enamel and enamel hypoplasia usually associated with rickets, although certain (yellow) idiopathic spots show a similarity to dull, chalky white and later dark brown spots seen in dental fluorosis.

The results of this study, therefore, confirm the claims of several authors that they had observed enamel spots on tooth surfaces of children who regularly consume drinking water extremely poor in fluoride.

Zahnärztliches Institut der Universität Bern, Switzerland

Incidence of caries after five years of fluoridation

Rosa E. Zamorano and Victor M. Duteil.
Revista D., Puerto Rico 10:67-68
July-Aug.-Sept. 1958

In 1952, prior to the start in 1953 of a fluoridation program in Puerto Rico, 974 children between the ages of 6 and 15 years, residing in the metropolitan zone, received dental examinations. In 1958, after five years of fluoridation, the authors

examined 1,892 children in the same age group.

In 1952 the DMF rate in a six year old child was 1.23; in 1958 it was 0.42, a reduction of 65.9 per cent. In seven year old children the reduction in DMF was 49.1 per cent.

In 1952 the average number of DMF teeth was 5.8 per child between the ages of 6 and 15 years. In 1958, the average had dropped to 4.04; a reduction of 30.4 per cent in the permanent teeth and of 35.2 per cent in the deciduous teeth.

It cannot be claimed that the only factor causing a reduction in caries is the fluoridation of drinking water. Other factors which may have influenced the reduction in caries include better nutrition, a broadening of school dental services, and improved oral hygiene through better dental health education.

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**Studies of the early lesion of enamel caries:
its nature, mode of spread,
and points of entry**

A. I. Darling. *Brit.D.J.* 105:119-135

Aug. 19, 1958

Among the many problems relating to the pathology of the carious lesion in enamel still to be solved are: the mode of entry of the lesion through the surface zone; the significance of the enhanced interprismatic markings, cross-striations and the striae of Retzius as seen in carious enamel mounted in balsam; the nature of the translucent zone, and the relationship between clinical, roentgenographic, histologic and microroentgenographic findings. If these problems were solved it might be possible to understand more about the nature of the process itself and perhaps the causative factors might be deduced.

To study the earliest stages of the attack of caries on the enamel, a number of teeth was collected, none of which showed any roughness or break in the enamel surface to be examined. The most advanced lesions were white or stained spots, and many of the teeth showed no recognizable lesions. Each tooth was photographed to show its proximal surfaces. A bitewing roentgenogram then was taken with twice the normal exposure to ensure that any radiolucency was demonstrated. The teeth with macroscopically

recognizable lesions were sectioned mesiodistally in the longitudinal or transverse plane, and ground down as previously described (Darling, 1956) so that the final section included the center of the lesion.

The translucent zone around early enamel caries as seen in balsam is caused by the presence of about 1 per cent of spaces and probably is the earliest demonstrable stage of enamel caries.

The probable points of entry of the cariogenic agents through the surface zone appear to be related closely to the striae of Retzius.

After the carious lesions have penetrated the surface zone, the process may extend along the interprismatic substance from which it strikes laterally through the cross-striations and from these lengthwise along the prism core. In the outer half of the enamel, when striae of Retzius are well marked, the line of progress seems to be primarily along these striae, and from the striae along the prisms.

Resistant and soluble structures, demonstrated within the enamel, are to be explained in terms of the differential solubility of two types of organic matrix. A new theory of enamel structure, necessary to explain these findings, has been suggested. The proposed theory of caries does not appear to be in conflict with any of the known facts about caries etiology. It also helps to explain enamel structure and some of the hitherto neglected or irreconcilable facts concerning caries.

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**Five years' experience with fluoridation
in Norway, Maine**

Alonzo H. Garcelon. *New England J.Med.* 260:127-129 Jan. 15, 1959

The town of Norway, Maine, began fluoridating its water supply on October 17, 1952. A report in 1956 on the beneficial effects of fluoridation may have minimized the result, because some of the children included in that study did not live in Norway, or did not use the fluoridated water continuously.

The present study was designed to determine what effects fluoridation had on the permanent teeth of children 6 to 14 years old who used the

fluoridated water continuously for the first five years after fluoridation was started.

Between 1952 and 1957, the average number of DMF permanent teeth was reduced by more than half among the children six to nine years old, by more than a quarter among those 10 to 12 years old, and by about a tenth among those 13 and 14 years old. During the same period, the percentage of children six to nine years old who were entirely free of caries in permanent teeth more than doubled. The differences in rates all are statistically significant.

Thus, children 6 to 14 years old received significant benefits from the first five years of fluoridation, even though some of the children had many of their permanent teeth erupted before fluoridation began.

Division of Dental Health, Maine Department of Health and Welfare, Augusta, Maine

Practicing your dental health teaching in 1958

William A. Jordan, Joe G. Neal
and S. E. Valento. *North-West Den.*
37:277-282 Sept. 1958

In 1949 a questionnaire survey of public and parochial schools in the State of Minnesota elicited the information that 17.8 per cent of the 730 schools reporting had soft drink dispensers in the schools within easy access of the students at all times. Over 63 per cent of these schools were selling candies and soft drinks. The sponsoring group usually was the local Parent-Teacher Association; profits were used to buy football equipment, band uniforms and sometimes to support the school cafeteria. The sponsors of the 1949 survey—the Minnesota Department of Health, Minnesota State Dental Association and the Minnesota Department of Education—launched an educational program to inform the schools and the parent-teacher associations that the practice of selling candies and soft drinks in the schools impairs the dental health of school children and interferes with proper nutrition. In recent years the Congress of Parents and Teachers has recom-

mended that the sale of candy and soft drinks within the school during class periods be discontinued in behalf of the child's general and dental health.

To determine the progress made in prohibiting the practice of selling candy and soft drinks within the schools of Minnesota, a follow-up questionnaire was sent to some 1,498 superintendents of public schools and principals of parochial schools in January 1958. Of the 841 schools reporting, 66 per cent still permit the sale of candy or soft drinks in their schools in some manner. But of the 559 schools permitting sales of confections and soft drinks, 455 (81 per cent) restrict this practice to social events such as athletic games. Many schools that sell confections and soft drinks at sports events indicated that a large share of the consumption is by adults in attendance. Of the 559 schools permitting sales of candy and soft drinks within the school building, only 8.2 per cent state they have dispensers available in the halls; this is about a 70 per cent reduction in this practice in comparison with 1949.

About 24 per cent of the Minnesota schools responding to the 1958 questionnaire report they still make candy and soft drinks available during the school lunch period.

Of 244 schools reporting that their school permitted the sale of candy and soft drinks in the schools in 1949, 152 had discontinued the practice in 1958.

The 1958 returns show a change in the sponsorship of programs for selling candy and soft drinks. Not once was the P.T.A. mentioned as a sponsoring group in 1958; today, sponsorship has shifted to various student groups; in most instances, these groups sell candy and soft drinks at social events and games.

Returns from the 1958 questionnaire show progress in the restriction of the sale of candies and soft drinks in the schools of Minnesota. They also show that continuous effort is needed to teach school children good dental health and nutritional habits.

Minnesota Department of Health, Minneapolis, Minn.

Hospital
dental service

**Consulting service
meets oral surgery needs
of retarded children**

Welfare Bul. 49:7-8 Oct.-Dec. 1958

An oral surgical consulting service has been initiated at the State School for Mentally Retarded Children at Lincoln, Ill., to meet the growing need for extensive dental care and oral surgical procedures.

The main purpose of this new program is to provide oral surgery for the resident children of the school who are uncooperative and cannot be managed in one of the school's three dental clinics. The provision of specialized treatment of jaw fractures, acute oral infections and suspicious lesions in the maxillofacial region rounds out a complete dental and oral service.

Frequent consultation between the staff members of the new service and the staff members of the dental clinics facilitates early diagnosis and treatment of unusual oral and dental diseases and abnormalities.

The staff of the dental clinics refers problem patients to the consulting service where Dr. Joseph Albaum, superintendent, examines the patients, reviews patient's and family's histories and decides how the dental and oral surgical needs in each instance will be best served. Roentgenographic examinations and—if indicated—biopsy findings are used extensively at the consulting service.

Written permissions from parents or guardians are obtained before oral surgical treatment is initiated. Prior to any oral surgical intervention, the patient is examined at the medical clinic. Laboratory data are acquired to provide a complete picture of the patient's physical condition. The patient is admitted to the school's hospital

the night before surgery is scheduled. Preoperative medication usually is administered one hour before the operation which is performed under general anesthesia in the hospital's operating room. In mentally retarded children, general anesthesia makes possible oral surgical procedures which never could be attempted under local anesthesia. Postoperative care and follow-up examinations are handled by the physician in medical charge of the patient's ward.

Several mentally disturbed children who previously had never received oral surgical treatments now are cared for at the consulting service with satisfactory results.

Many children who had to be transferred to special wards for the seriously disturbed patients have been found to be suffering from severe infections and inflammation or other pathologic changes of oral tissues. Treatment of these conditions by the consulting service has enabled the patients to be returned to the wards for manageable patients and, in many instances, the routine administration of tranquilizing drugs could be discontinued.

Children suffering from convulsive seizures frequently exhibit hyperplasia of the gingival tissue which covers the teeth completely and impairs mastication. At the consulting service, resection of the hyperplastic tissue has provided satisfactory results.

The school's department of roentgenology, the laboratories, the anesthesia section as well as the dental, medical and nursing services are cooperating to provide oral surgical service. Such teamwork insures the continuance and future expansion of a program which provides to all children of the school diagnosis and treatment in the field of oral and maxillofacial surgery.

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Forensic dentistry

An intraoral photographic apparatus for personnel identification

Harvey W. Lyon. *U.S.Armed Forces M.J.*
10:304-311 March 1959

Without recorded dental findings, identification of the dead often is difficult. For positive identification, the dental record must be complete and accurate. The present system for recording intra-oral findings on a dental chart, however, introduces the possibility of human error. In addition, the dental chart has limitations in the recording of the anatomy, anomalies and lesions of the oral cavity. Taylor and Schlack in 1948 began a study to determine the feasibility of using intraoral color photography of the oral cavity as a means of personnel identification. They produced an apparatus for photographing the anatomic structures of the oral cavity in color, and after successful field testing reported their observations (1950).

A new apparatus, designed and constructed at the U.S. Naval Medical Research Institute, Bethesda, Md., is similar to the unit produced by Taylor and Schlack. The apparatus has been evaluated over a period of four years during which time more than 9,000 photographs were taken, without any major breakdown or malfunction of the equipment.

The basic unit consists of a fixed focus, 35 mm. camera with synchronized flash shutter, an electronic stroboscopic light to illuminate the interior of the mouth, and a removable front-surface metal mouth mirror attached to a reversible frame.

Three exposures are made of each subject. In the first view, the labial and buccal surfaces of the maxillary and mandibular teeth in occlusion are photographed from an anterior position. Cheek retractors separate the lips; the head is

supported by a chin rest. In the second exposure, the upper lip, palate and the occlusal surfaces of the maxillary teeth are photographed from the reflecting surface of a front surface mirror. For the third exposure, the mirror is reversed and the lower lip, tongue and the occlusal and buccal surfaces of the mandibular teeth are recorded. Identification data in code, containing the patient's name, date of photograph, branch of service, serial number, age, years of service, sex, race, and place (state) of birth appear in each photograph.

The camera consists essentially of an Eastman 35 body to which a Wollensak 75 mm. color corrected lens was adapted. Exceptional depth of field is obtained by stopping the diaphragm down to f 4.5. The illumination source consists of a General Electric electronic multiflash tube energized by an accompanying power pack.

Before the patients passed through for processing, all mouth mirrors were steam sterilized and the equipment assembled.

Focusing is determined automatically by a pair of focusing lights built into the flash reflector. Each light projects a beam in the form of a horizontally split letter o. When the subject's chin is in correct position, the split beams merge to form a distinct letter o on the labial surface of the anterior teeth. The camera operator assists the subject in moving his head forward or backward on the chin rest until the two beams merge into a single figure. The operation is accomplished in a matter of seconds.

Figure 1 shows the first exposure of a subject being made. The dotted lines enclose the field of view—measuring 2 1/2 inches high and 3 1/2 inches wide—recorded by the photographic apparatus. Figure 2 shows the completed photographic strip similar to the Kodachrome transparency, for insertion in the health record. Figure 3 shows the apparatus in use. The position of the patient, the sterilizing rack with mirrors, and the electronic power supply are shown.

The quality of the photographic reproductions is excellent. Dental caries, fractured and stained enamel, calculus, and soft tissue lesions are easily distinguishable. Silver and gold restorations show good color contrast.

There are advantages in using this type of apparatus for intraoral photography. Personnel op-

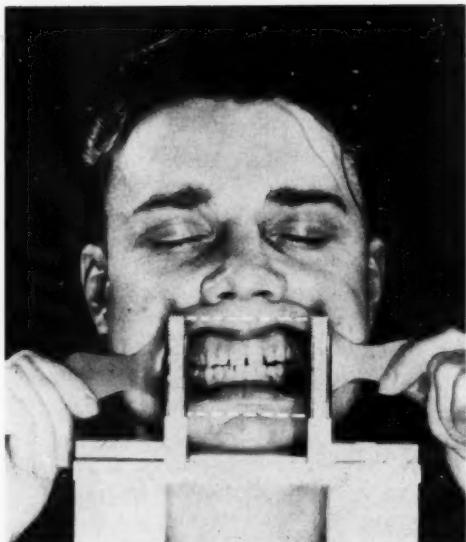


Figure 1 The dotted lines enclose the field of view recorded by the photographic apparatus

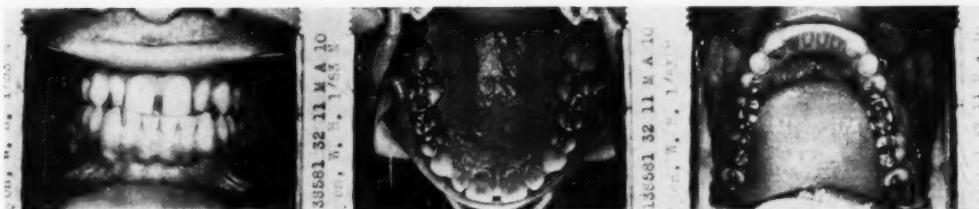


Figure 2 A completed photographic strip with the three views made of the subject. These will be inserted in the subject's health record



Figure 3 The identification apparatus in use, showing position of patient, photographic unit, sterilizing rack with mirrors and electronic power supply

erating the instrument require no specialized training. Pertinent factors such as light source, focus, diaphragm opening and exposure time have been predetermined and remain unchanged regardless of whether the camera is being used for identification or clinical procedures. Long-term observations pertaining to the progress or retardation of caries and periodontal disease can be observed with infallible accuracy. Color balance and quality of the photographs never vary.

Results of the four year field trial show that if the apparatus were to be used in induction centers to process large groups of personnel, modifications would be necessary to provide more efficient results. The camera body should be capable of holding at least 100 feet of film, and fitted with a rapid film advance lever and a device to prevent double exposure. For greater patient comfort, the photographic unit, excluding the power pack, should be mounted on an elevated, crank type, adjustable base to allow for differences in patients' heights.

The use of intraoral color photographs adds to the usefulness of the dental record in carrying out identification procedures.

*U.S. Naval Medical Research Institute,
Bethesda, Md.*

The dentist on the witness stand

W. Peter McAtee. *New Mexico D.J.* 9:11-14
Nov. 1958

Courts accept dentists as specialists in a branch of medical science, and as such, dentists are governed by the same rules applying to physicians generally. A dentist is recognized as an expert witness, competent to testify about all questions involving his knowledge and skill in his profession.

The dentist who is to be a witness should take extraordinary care to insure that his report is complete and correct. The dentist should: (1) take all notes and records, including roentgenograms, to court. When testifying, a dentist may refer to his notes to refresh his memory; (2) be unafraid; (3) testify as an expert only if satisfied that he is qualified in the area of specialization

involved; (4) inform his patient's attorney of all unfavorable facts; (5) be courteous; (6) refrain from smugness; (7) tell the truth without reservation or exaggeration; (8) realize that it is not an admission of ignorance to indicate that his opinion is not conclusive; (9) refrain from using terminology that will not be understood by a jury, legal counsel or the judge; (10) preserve his dignity; (11) refuse to take sides, exaggerate or color his testimony, and (12) review the case thoroughly in advance.

The dentist or physician who is testifying cannot be cut short on his testimony by the examining attorney. When this is attempted, the witness should ask the trial judge if he may amplify his answer. Ready assent is always given to this request. The expert witness is never compelled to give just a "yes" or "no" answer, but always may request an opportunity for amplification.

If the dentist is asked how much he is being paid to testify, he should pause a minute, then say, forcefully but politely, "Nothing." Such a reply demands amplification. Everyone in the court will listen carefully while the witness adds something like this: "I have been asked to come here to divulge the contents of my records of treatment of this patient. I never charge for such testimony. I do charge for the amount of time I am compelled to remain away from my other patients."

As a professional man, the dentist can be called on to testify either as the attending dentist or as an expert witness.

All witnesses called to testify are subject both to direct examination and cross-examination. The cross-examiner can ask questions from all angles and can make suggestions and innuendoes. If the dentist has prepared himself, and given straightforward testimony, he has nothing to fear. He should anticipate that the opposing attorney has prepared himself, and may know a great deal about the medical facts of the case, perhaps more than the dentist himself may know. The witness should never argue with the opposing attorney, but should answer the questions briefly and then remain silent.

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N. Mex.*



Bacteriology

A contribution to the mycology of the mouth

E. C. Fox and G. C. Ainsworth. *Brit.M.J.*
No. 5100:826-828 Oct. 4, 1958

Fungi were isolated from the mouths of 149 selected patients at the Birmingham Dental Hospital from 1952 to 1955, to ascertain whether there is any relation between fungi and certain common pathological conditions.

In angular cheilosis, the mycological pattern was characteristic. Only 3 of 24 patients with angular cheilosis were negative for fungi; in 17 of the remaining 21 patients, *Candida albicans* was found. Two of the four negative for *C. albicans* gave *Candida krusei* and one gave *Candida parapsilosis*; that is, only one patient positive for fungi failed to yield a species of *Candida*.

Of 36 patients with gingivostomatitis, 19 yielded *C. albicans*; 2 others yielded *Candida tropicalis* and 4 others yielded *Aspergillus niger*.

Of 40 patients with lingua nigra, 37 were positive for fungi, but the distribution of isolates suggested that the isolates were present by chance and bore no causal relation to the clinical condition.

In 22 patients with lingua geographica, the mycological pattern was similar to that of lingua nigra.

Twenty patients with coated tongue and seven patients with denture-sore mouth were examined. Fewer fungi were isolated from the mouths of patients with these two conditions of uncertain etiology than from the mouths of patients with the other four conditions. The more or less random incidence of the isolates suggests that both conditions are nonmycotic.

In a control series of 188 patients with normal mouths, fungi were isolated approximately as often (66.0 per cent) as from the 149 patients with abnormal mouths (84.5 per cent). Little evidence

was obtained of a characteristic fungus flora of the mouth. Of the 76 different species of fungi recorded, only 15 were common to the two series. Of these, *C. albicans* was isolated most often, in 52 instances from normal mouths and in 59 instances from the abnormal.

C. albicans seems to play a primary part in the etiology of angular cheilosis and has some connection with the etiology of gingivostomatitis.

During this survey, no instance of mycotic infection of the mouth which could be attributed wholly to antibiotic treatment was observed.

University of Birmingham, Birmingham, England

Bacteriologic and microscopic studies of the self-disinfecting factors of normal epithelial layers of the face

A. Hellat. *Ann.med.exp.biol.fenn.* 20:140-148
July-Sept. 1958 [in German]

A series of microscopic and bacteriologic experiments to determine whether the epithelial layers of the human face exert a self-disinfecting activity was carried out at the Dental School of the University of Helsinki, Finland.

Various microorganisms were tested on epithelial specimens taken from regions surrounding the mouths of normal persons, who had been advised to remain unwashed and unshaved for at least three days.

The experimental series consisted of 13 tests in which all available test media were used.

The results revealed that no active bactericidal or inhibitory agent—with the exception of lysozyme—is present on the epithelial layers of the face (at least of normal persons). The survival rate of the test bacteria—although slightly varying in different individuals—remained stable and was, therefore, not influenced by the activity of any undetected bactericidal agent.

Lysozyme, a crystalline basic protein, was found on the epithelial layers of the face, although in insignificant amounts. Its established antibacterial activity, however, was less strong than that of lysozyme established in human saliva.

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Anatomy

**Speculations on the interrelations
of the history of tools
and the biological evolution**

S. L. Washburn. *Human Biology* 31:21-31
Feb. 1959

In the evolutionary expansion from an apelike brain to the human brain, the different parts of the brain did not expand equally.

Penfield and Rasmussen (1950) demonstrated how the various parts of the human body are represented in cerebral cortex. The largest areas are those associated with the regions exerting the greatest functional influences, mainly the face and the hands (Fig. 1). By comparison, in the cerebral cortex of a monkey (Fig. 2) the area associated with the feet is almost as large as that representing the hands. When the brain increased in size during human evolution, the areas of the cortex representing the functions of the face and hands increased vastly, but the area associated

with the functions of the feet remained stable or decreased slightly.

The increase in the size of the brain occurred after the time tools were invented, carried and used. Every selection of more complicated tools required changes in the form and proportion of the hands as well as of the parts of the cerebral cortex controlling the hands.

The areas of the human brain concerned with the functions of speech and mastication are also comparatively large. The main reason that a chimpanzee is unable to learn to talk is simply that he lacks the large amount of brain necessary for speech. The frontal lobes of the human brain are also greatly expanded, and these areas are concerned with the elaboration of thought and planning.

The general pattern of the human brain, however, is similar to that of ape or monkey. Its uniqueness lies in its large size, specifically in the areas concerned with cultural functions. It was, therefore, human culture which created the present condition of the human brain.

The evolutionary order of man shows an apelike mammal, the tool-using *Australopithecus*, a predecessor of the hunting, speaking and tool-producing ancient man, and, therefore, of modern man. If we accept this evolutionary order, a better understanding of the evolution of the diet, changing during the different developmental periods, is of paramount importance in the interpretation of primate, humanoid and human fossils.

J. N. Spuhler (1959) stated the reasons for the lengthening time which tooth eruption took in the evolution of man. The teeth form over a considerable period of time before they erupt, and during this time the developing teeth are affected by various environmental factors. If the growing child is subjected to severe starvation or disease, there are characteristic defects built into the tooth structures.

The human dentition requires a developmental period of several years and, therefore, a record of health and disease is frozen into it. It seems probable that the teeth and the facial bones of fossils bear the recording marks which will help to determine whether anthropoid or humanoid animals were hunters or vegetarians. With microscopic roentgenography and microchemistry,

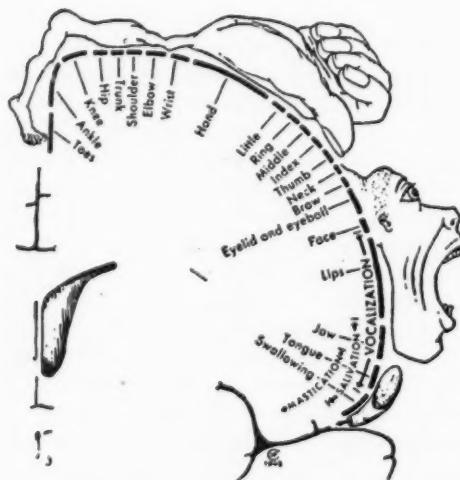


Figure 1 The cerebral cortex of man



Figure 2 The cerebral cortex of monkey

adapted to anthropological research, major progress in the evaluation of fossils is possible.

In the evolutionary reduction of the dentition, the incisors and canines primarily have decreased in size. This decrease may have been the direct consequence of the use of tools, and is observable more in the male apes than in the female apes. The cause of this sex difference was lost in human

evolution before the *Australopithecine* period, but it can be assumed that at that time wooden clubs had replaced the canine teeth as weapons. The *Australopithecus* had extremely large molars and temporal muscles. This suggests that the preparation of food began in the middle Pleistocene period along with the hunting of large animals. Before that time selection still favored the maintenance of an excellently functioning grinding apparatus.

With the gradual reduction of the human dentition, the entire face decreased in size. The brow ridges disappeared not only in the developing man but also in all domestic animals such as cats, cattle, dogs, horses and pigs. A similar development can be observed in rats; tame rats have smaller brow ridges and smaller faces than wild rats.

Biological changes in the hands, brain and face of man were the consequence of the use of tools created by the selection pressures which these new implements required. Tools changed the entire pattern of life of man bringing in hunting, cooperation, communication and language. Memory, foresight and originality were favored as never before, and the complex social system made possible by the tools could be realized only by domesticated (civilized) individuals. In a very real sense, tools created *Homo sapiens*.

University of California, Berkeley, Calif.

Histology

**Cystadenolymphoma of the parotid region:
report of two cases**

L. Miselli. *Arch. ital. mal. appar. diger.*
23:423-438 July-Sept. 1958

Cystadenolymphoma, also known as papillary cystadenoma lymphomatosum, is a slowly growing, usually benign, tumor which is situated at the angle of the mandible just below the parotid gland. It is comparatively frequent in patients between 50 and 75 years old. It is rarely seen in children, although Storh and Risak described such a tumor appearing in a child less than two years old.

Macroscopically, the tumor appears to be of moderate size, hardly ever exceeding the size of a plum. It is well encapsulated, of elastic consistency and mobile; its surface is smooth.

Histological specimens reveal numerous cavities containing mucinous substances, a lymphoreticular stroma, and young and adult tumor cells of the lymphatic type. The cystic cavities occasionally contain eosinophilic granular substances with few leukocytes and squamous epithelial cells. Small papillary formations may form in the cystic spaces.

More than 100 case reports have appeared in the literature, the majority of them within the last few years.

The characteristic features of the two cases reported here were an abundance of lymphatic tissue, mature lymphocytes with pseudofollicular formation and glandular tissue with a tubular cystic or a papillary structure. The epithelial cells were characterized by large acidophilic cytoplasms with a small oval nucleus located centrally or peripherally.

Two theories were advanced to explain the histogenesis of cystadenolymphoma: the first that it is of salivary gland origin, and the second that it is of branchial origin.

Although neither of these theories can be positively excluded, the author prefers the branchial theory because the tumor usually arises in areas where branchial cysts or fistulas frequently occur. The tumor probably is derived from embryonic elements remaining in those regions.

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A calcifying epithelial odontogenic tumor

J. J. Pindborg. *Cancer* 11:838-843
July-Aug. 1958

Three instances of an unusual odontogenic tumor that does not show the ordinary features of ameloblastomas have been seen by the author. All three instances showed the same combination of radiolucent and radiopaque areas in the roentgenograms, and all occurred in connection with embedded teeth. The characteristic histologic picture was identical in the three instances. The tumor was invasive, which accounted for the recurrences in two of the three patients. The tumor seemed to behave like an ameloblastoma and could not be considered malignant even though a pronounced nuclear variation was found. The older the tumor, the more pronounced was the calcification.

A review of the literature revealed four additional case reports. All showed exactly the same histological picture and all the lesions occurred in connection with embedded teeth.

It seems justified to distinguish between two types of epithelial odontogenic tumors; namely, the ordinary ameloblastoma and a calcifying epithelial odontogenic tumor. The latter type, which probably derives from the reduced enamel organ of embedded teeth, has a peculiar epithelial pattern exhibiting extensive intracellular degeneration. The degenerated cytoplasm has a strong affinity for mineral salts, which are de-

posed in the form of Liesegang's striae or rings. In the oldest parts of the tumor the calcified cells flow together to form a conglomerate that, in the roentgenogram, appears as a radiopaque area.

The calcifying epithelial odontogenic tumor behaves clinically as the ordinary ameloblastoma and has the same tendency to recur locally.

Royal Dental College, Copenhagen, Denmark

**An experimental investigation
into the permeability of enamel
and dentine with reference
to its relation to dental caries**

G. C. Blake. *Proc. Roy. Soc. Med.* 51:678-686
Aug. 1958

This work, an investigation *in vitro* on undecalcified material from sound teeth extracted for orthodontic reasons from children between 11 and 13 years old, falls into three parts: (1) experiments to trace the diffusion channels in enamel and dentin; (2) experiments using the osmotic pressure effect to measure the rate of water passage across the crown and root in sound teeth, and (3) investigation of the changes in permeability that occur in the dentin as a result of age and caries.

In young teeth the dentinal tubules which everywhere penetrate the dentin are occupied by the dentinal fibrils. No peripheral space between the fibril and the hard tissue wall of the tubule exists; however, it is likely that there is free diffusion of soluble substances within the fibril itself though the odontoblast may exercise selection of substances which diffuse into it and thereby to the dentinal fibril. When the odontoblasts or dentinal fibrils have degenerated, the dentinal tubule becomes a free channel uninfluenced by odontoblast metabolism and is available for the transport of fluid and dissolved substances, either from the pulp or from the mouth via conducting channels in the enamel.

In the enamel there are no pathways comparable to the open tubules of the dentin. However, the tufts and the lamellae provide easy paths for

fluid and diffusible substances, and provide passages into and through the enamel. There appear to be no direct communications between these permeable enamel elements and the dentinal tubules. However, many dentinal tubules cross the amelodentinal junction and end in relatively long straight tubes which lie in close association with permeable regions in the enamel.

The dentin matrix at the bases of the lamellae and at the bases of many of the tufts appears to be permeable. It is chiefly this region which makes possible diffusion and flow from the enamel into the dentinal tubule system and vice versa and may also represent vertical drainage regions in the peripheral dentin. The tufts normally are sealed off from the surface by impermeable enamel. However, in caries and other states of abnormal enamel permeability, the tufts may connect with the surface by abnormally permeable prism sheaths.

Measurements were made of the rate of flow of water through the crowns and roots of sound young teeth in response to the osmotic pressure effect of 5 per cent sodium chloride. It appears from these measurements that the root is considerably more permeable to water than the crown.

Translucent and impermeable regions that develop in both the crown and root are shown to be associated with the closure of dentinal tubules with a mineral substance of high radiopacity. In affected regions all stages of narrowing during closure of the tubules can be found, supporting the view that this is a reaction of individual odontoblast dentinal fibril systems and not a general deposition of calcified material throughout the dentin. It is probably a continuation of the normal peritubular calcified sheath formation. Like the normal peritubular zone, this material occluding the tubules is more radiopaque than the rest of the intertubular dentin, and on decalcification leaves no organic matrix that can be demonstrated by normal histological methods, so that the tubules which have been occluded are not distinguishable in decalcified preparations.

Eastman Dental Hospital, London, England



The selenium content of human teeth

D. M. Hadjimarkos and Carl W. Bonhorst.
Oral Surg., Oral Med. & Oral Path. 12:113-116
 Jan. 1959

Two studies were undertaken to determine the selenium content of enamel and dentin in different groups of teeth. The first group consisted of 29 permanent teeth from persons between 14 and 30 years old, and six deciduous teeth. The second group consisted of 85 permanent teeth from subjects of four different age groups, from under 20 years to over 50 years of age.

The results indicate that selenium is a normal constituent of enamel and dentin. The selenium content of deciduous teeth is higher than that of permanent teeth. There appears to be no definite pattern regarding a change in the selenium content of enamel with advancing age.

In six deciduous teeth, the selenium content of the dentin averaged 2.60 ppm; of the enamel, 4.50 ppm. In permanent teeth, the selenium content of the dentin ranged from 0.35 to 0.52 ppm; that of the enamel, from 0.43 to 1.60 ppm.

Dental School, University of Oregon, Portland, Ore.

Portals of entry and distribution of calcium in hard dental tissues

E. V. Borovsky. *Stomat., Moscow*
 36:6:11-13 Nov.-Dec. 1957

Four dogs were given doses of radioactive calcium at a level of 20,000 to 80,000 counts per minute per gram of body weight, and the teeth were removed at various times, washed, and sections prepared. Tooth sections from 30 to 50 microns thick were brought in contact with sensitive x-ray films for from two to three weeks.

The radioautographs showed the calcium in the

dentin lying closest to the pulp. Calcium also appeared in the cementum, in a narrow layer of enamel and extending into the bony tissues. On the basis of the radioautographs it can be concluded that the radioactive calcium becomes localized in the dentin nearest the pulp and enters through the vessels of the pulp.

The fact that calcium always occurs in cementum and enamel as a narrow layer, whereas it is still absent in the surrounding tissues, shows that the calcium enters the enamel from the saliva and enters the cementum from the periodontal tissues.

In other experiments the root canals of incisors on one side of the jaw were filled before the administration of radioactive calcium to dogs. Fourteen days later the incisors on both sides were removed. In the incisors with filled canals the radioactive calcium spread into the cement and into the enamel in about the same way as in untreated teeth. This indicates that the calcium enters the enamel from the saliva and the cementum from the periodontium.

The periodontal tissues form the path by which calcium enters the cementum; the pulp forms the path by which it enters the dentin.

Medghis, Petrovka 12, Moscow, U.S.S.R.

Plasma amino acid levels in malignant oral tumors

G. Y. N. Iyer. *Indian J.M.Res.* 46:168-169
 July 1958

Forty-two patients with malignant tumors were studied to determine the levels of free alanine, glutamine, glutamic acid, glycine, serine, tyrosine, valine, leucine and isoleucine in the plasma. Eight of these patients had malignant oral tumors.

Paper chromatography was used for the determination of the amino acids in the plasma. An increase in the level of glutamic acid was observed in all patients. The levels of the other amino acids, except glycine, showed a decrease. The level of glycine did not appear to be changed significantly, except in patients with diagnosed leukemia.

No correlation, however, could be established between the specific types and the locations of malignant tumors and changes in the levels of the amino acids in the plasma.

The Mall, Kanpur, India

Anthropology

**Papago Indian dentition:
a preliminary report**

Donald H. Morris. *Arizona D.J.* 4:168-169
Dec. 1958

Several morphological studies on teeth have been made recently at the laboratory of physical anthropology at the University of Arizona. Traits or tooth characteristics have been defined and comparative trait-frequency analyses made, using data gathered on the dentitions of several racial and ethnic groups. Bicuspid, because of their relatively simple crown structure, were used.

The present study is a morphological analysis of the crown surface of the permanent dentition of the Papago Indians. This tribe of about 9,000 members is located in the southwestern part of Arizona and northern Sonora, Mexico. Field work was begun in the spring of 1958. The study material consists of dentitions of about 100 students of both sexes at St. John's Indian School, Laveen, Ariz., and at the Tucson Training School, Tucson, Ariz.

Impressions were made of the teeth of teen-age Papago Indians. The casts are being examined, and the traits discernible on each tooth are being classified and catalogued. A cumulative record is made for each dentition. The frequency of occurrence of particular traits in each tooth group in males and females will be stressed as useful for comparative purposes. The gross size of the teeth, although not of primary concern in this study, will be determined as accurately as possible because of the general interest in this feature in comparative works.

At this time no statement may be made on the series with certainty other than on certain anomalous conditions. The accessory cusp (Carabelli's cusp) rather frequently found on the mesiolingual

surface of the maxillary first and second molars has not been encountered in this series. The extreme expression of lingual ridging of maxillary incisors is frequent. The congenital absence of incisors and bicuspid is noticeable, as are supernumerary dental elements.

Department of Anthropology, University of Arizona, Tucson, Ariz.

**The dentition of the *Phascolotherium*,
a mammal of the Jurassic period**

M. Friant. *Rev.stomat.* 59:132-135 March 1958

The Jurassic period has often been called the "Age of Reptiles." Few mammalian species existed, most of them smaller than a rat.

Remains of *Phascolotherium*, belonging to the order of *Marsupialia*, the lowest mammalian group, were found in the slates near Stonesfield, England. This extinct species was named *Phascolotherium Bucklandi Broderip-Owen* after its discoverers.

This small, pouched mammal, probably the ancestor of the kangaroo, bandicoot, opossum and wombat, was insectivorous, and became extinct because of its inability to survive in a world dominated by carnivorous reptiles.

Anthropologists, roentgenologists and dental researchers recently have examined several intact skulls of *Phascolotherium*. They found that neither teeth nor tooth buds existed in the upper jaw.

In the lower jaw, there were eight incisors, two canines, four premolars and ten triconodont molars. Large diastemata separated the canines from incisors and premolars. Smaller spaces existed between the incisors.

This unique dentition of *Phascolotherium*, dissimilar to that of the other mammalian species of the Jurassic period such as *Amphilestes*, *Stereognathus*, *Amphitherium*, *Amblotherium*, *Plagiula* and *Triconodon*, must be regarded as a characteristic feature of a single mammalian species, a holotype.

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History

**Evolution of tooth cutting techniques
and its influence on restorative dentistry**

Robert C. McKay. *J.Pros.Den.* 8:843-853
Sept.-Oct. 1958

Up to almost the beginning of this century, some dentists still were using drills and burs rotated by the fingers in an effort to prepare cavities in teeth. In 1846, a finger ring and drill socket was designed by A. Westcott. In 1846 a dental drill was devised by J. Foster Flagg; this was the first drill to be generally accepted by American dentists. Merry's drill, introduced in 1858, was considered to be a great advance.

The introduction of the dental foot engine by Morrison, in 1871, is an important date in dentistry's history. It opened the door to a new concept of tooth cutting techniques. Green in the period from 1870 to 1874 developed the first electric dental engine. In 1914, the S.S. White Company introduced its Forsyth unit, the first of the unit type of dental engines. From about the turn of the century to 1945, no outstanding improvements were made in the dental engine. Existing engines were reliable, needed little servicing, and the engine speeds seemed sufficient for the cutting tools then in use. Just before World War II, diamond cutting instruments for use in dentistry were developed in Germany.

In 1945, R. B. Black brought out the air abrasive technic, and Black's Airdent unit was marketed in 1951. Black's work was the spark that started a chain reaction in developing better methods of cutting teeth. The fact that vibration could be eliminated stimulated thought in that direction.

In 1947, the S. S. White Company brought out carbide tipped burs. The efficiency of these new cutting tools soon was recognized. It became apparent that greater rotational speed was needed in order to have them work at peak efficiency.

Straight ball-bearing and highly polished glass-sleeve bearing handpieces began to make their appearance. In 1945 the Chayes Dental Instrument Company marketed a straight handpiece using two highly polished glass-sleeve bearings. In 1953, Densco, Inc., brought out its first ball-bearing handpiece; this was the first complete ball-bearing handpiece, and it could be used up to 25,000 rpm and above. In 1954, the Kerr Dental Manufacturing Company introduced in the United States the Imperator handpiece made in Germany; later, a smaller contra-angle head, and the instruments to go with it, were developed. By 1955, S. S. White, Mid-West and others began to produce ball-bearing contra-angle handpieces operating in the neighborhood of 20,000 rpm and above. In 1955, McEwen described the high-speed handpiece developed by Richard Page. This instrument, marketed as the Page-Chayes handpiece, was a complete departure from all previous ideas in the design of tooth cutting devices. It was belt-driven and eliminated the necessity of using gears. Lubrication was built into the bearings. Among the firms who have since entered the high-speed field with belt-driven instruments are the Surgident Company, the Kerr Company and the Mid-West Company.

The past 10 to 12 years have resulted in a tremendous interest in devising means that would meet patient acceptance and tolerance to cutting tooth structure. Today the field of tooth cutting technics is still in a state of flux. No one instrument has been devised that will meet the requirements of each dentist.

Each dentist must decide for himself, through investigation and use, the type of equipment best suited to the requirements of his practice. No dentist can be expected to clutter up his office in an attempt to use all the various instruments and technics that are available.

115 East 61st Street, New York 21, N.Y.



Licensure

Dental preceptorships in the State of Florida

Frank T. Scott. *J. Florida D. Soc.*
29:3-5 Summer 1958

To try to meet a critical need for dentists in local county health units of Florida, the Florida State Board of Dental Examiners, after a study in 1957, formulated the dental preceptorship plan. This plan is based on a change in board regulations and not on a change in the Florida Dental Practice Law, thus leaving complete authority over the program under the control of the board.

Applications for preceptorships are submitted to the board by the bureau of dental health of the Florida State Board of Health. Only recent dental graduates meeting the highest moral, scholastic and professional standards are considered.

Under this program, a local dental society may offer a one-year preceptorship to a young dentist recently graduated from an approved dental school and eligible to take the Florida State Board examination. During the year of his preceptorship, he serves as a public health dentist in a county health department under the professional direction of a committee of dentists designated by the local dental society. He works under the administrative direction of the county health officer and his salary is paid by the county health department.

The preceptor has gainful employment between the time of his graduation and the time he takes the Florida board examination. He gains clinical experience under the direction of practicing dentists serving on the local preceptorship committees. He has an opportunity to become familiar with the standards and objectives of the Florida dental profession. He has an opportunity to develop poise and skill in expressing himself before groups through his dental educational work.

Dental preceptorships serve the public interest in three ways. The vacant dental chairs in Florida's public health centers and in the mobile dental trailers of the State Board of Health are manned by graduate dentists. Florida's public dental health program has the benefit of professional direction from Florida's outstanding dentists. Community groups interested in the school dental programs develop a more sympathetic understanding of dental problems.

The dental profession also benefits from the establishment of dental preceptorships. The preceptorships permit the dental profession more adequately to meet its responsibilities of providing dental care for underprivileged children. A preceptorship affords a prolonged period of professional observation and character appraisal before the preceptor is considered for licensure. Through preceptors a difficult public relation problem is met with a community service program which should reflect credit on the dental profession.

There is no obligation on the part of the State Board of Dental Examiners, the dental society or the county health department. The preceptor receives a monthly salary of \$600. His preceptorship terminates at the end of one year, whether or not he passes his state board examination. All preceptors receive as part of their training a two-week postgraduate course in various phases of dentistry. Each preceptor is required to attend all district and state dental meetings. He is required to write periodic reports to the State Board of Health.

During 1957 and 1958 seven preceptors served in Hillsborough, Dade, Duval, Volusia, Broward and Pinellas counties. The program thus far has been enthusiastically received by all concerned.

State Board of Dental Examiners, P. O. Box 2913, Jacksonville, Fla.

 Education**Dental mechanics**

Editorial. *Brit.D.J.* 105:149-150
Sept. 2, 1958

Whereas dental students used to spend 2,000 hours in the study of dental mechanics, the duration of the course was cut to 1,200 hours after World War II, and the most recent recommendations are for 600 hours, including the teaching of the properties of dental materials.

The result of this drastic reduction of time spent in learning the craft of dental mechanics is that some dental surgeons are incapable of doing their own mechanical work, unlike their predecessors of 35 years ago who were skilled technicians. The argument used in favor of the present arrangement is the unanswerable one that the dental practitioner today is far too busy at the chairside to have time or energy left to do his own mechanics. The lack of training in practical dental mechanics has been partially compensated for by more intensive teaching—particularly by demonstrations—and by instruction in how to direct or correct technicians. The aim of many dental schools is to relieve their students of all repetitive work from which nothing of further value can be learned once the technic has been mastered.

The last stage of reducing the training in dental mechanics has now been reached with its abolition as a subject for examination for the degree of B.D.S. at Birmingham University, an abolition which is almost certain to spread to other schools. Abolishing the examination should in no way lower the standard of work; it merely removes the necessity of practicing repeatedly the technic until the required standard can be reached under examination conditions in a given length of time.

Chairside demands have made it imperative that the operator should rely increasingly on his

technician, but he cannot discharge his responsibility to his patient unless his training has been such that he is well grounded in laboratory techniques as well as in physiologic requirements.

The teaching in dental mechanics given in the dental schools must remain such that the graduate is fully aware of the method of construction of any dental prosthesis, the skills required, and the difficulties which may be met. Only then will he be capable of detecting and, if need be, correcting any errors in the work which he accepts on behalf of his patients.

*13 Hill Street, Berkeley Square, London W.1,
England*

**The new department of stomatology.
at the School of Medicine,
Boston University**

Kurt H. Thoma. *Oral Surg., Oral Med. & Oral Path.* 11:937-938 Sept. 1958

Boston University has added to its Medical School a department of stomatology for the post-doctoral education of dentists, especially those preparing for a specialty board certificate or intending to make a career of dental teaching and research. The university has no undergraduate dental departments, and the entire staff will concentrate on graduate standards adapted especially for the accepted dental specialties. Excellent clinical opportunities are offered at associated hospitals. Other opportunities are offered in the departments of bacteriology, pathology and biochemistry. These include the carrying out of routine laboratory tests to get information regarding the general health of the patient and to undertake scientific investigations.

Personnel and facilities will be available for research work. A course in oral surgery is being inaugurated this year; a certificate will be awarded after the first year of study to those fulfilling the requirements. Graduate courses in the other recognized specialties will be offered beginning in September 1959. Refresher courses in these fields also will be offered during the coming academic year.

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Pathology

Connatal epulis

S. Orsós and S. Keresztury.
Deut.zahnärztl.Zschr. 13:177-182
 Feb. 15, 1958

Only 55 case reports on connatal epulis have appeared in dental and medical literature. Some authors used the misleading term "congenital" epulis, and others assumed that connatal epulis is identical with "granular cell fibroblastoma." Clinical, microscopic and roentgenographic examinations of a newborn, premature boy with a connatal epulis of the lower jaw proved that this type of tumor must be considered as a separate disease entity.

The tumor was connected by a broad pedicle to an intact mucosa and was entirely covered by an epithelial lining. The neoplasm caused no difficulties in breathing or feeding.

Because the infant had been born prematurely (after eight months pregnancy), and his birth weight was below 2,500 Gm., the indicated surgical removal of the tumor had to be postponed until his twelfth day of life.

The boy was the first living child of the mother. Previously, there were two premature births of nonviable embryos. Except for the mother's sister who was born without tooth buds, no oral anomalies were found in the family history. There was no Rh incompatibility.

Clinically, the surface of the tumor was smooth, of grayish color which at the site of the incision changed into dark yellow. The tumor's size was 8 by 9 by 6 mm.

Serial sections from one half of the tumor were stained with hematoxylin and eosin; the sections from the other half were stained with trinitrophenol and acid fuchsin; phosphotungstic acid hematoxylin; trichrome; azan, toluidine blue, or para-aminosalicylic acid (PAS).

Microscopically, the slightly keratinized gingival epithelium covering the epulis appeared

abnormally thin; its basal cells were enlarged. Small accumulations of lymphocytes had penetrated into the epithelium. The large granular tumor cells, with their dark-stained nuclei, formed a network of thin collagenous lines. Several of the tumor cells were fused together and formed expanded syncytia. A transition of giant cells to acidophilic cytoplasms had taken place. Islands of the dental lamina were situated close to the lower tooth germs which, however, were not disturbed by the neoplastic growth.

The uniqueness of this instance of connatal epulis consists of the fact that the tumor occurred in the mandible of a newborn boy. In the other 54 case reports, this or related tumor types occurred in the upper jaws of newborn girls.

Stomatological Clinic of the University of Debrecen, Hungary

Oral diagnosis of systemic disease

Eugene S. Hopp. *J.A.M.A.* 168:748-750
 Oct. 11, 1958

Certain physiological changes such as pregnancy, growth period, lactation and aging may produce nutritional deficiencies by increased demands on the organism. These deficiencies often are manifest in mouth changes.

Enamel hypoplasia may be produced during the formation period of enamel matrix by nutritional deficiency (particularly vitamins A and D), endocrine dysfunction and generalized infection as in the exanthemas, and prenatal syphilis. Enamel hypocalcification is most frequently produced by an excess of fluoride in the drinking water.

Gingival hyperplasia may occur in puberty and in pregnancy, and sometimes in patients receiving diphenylhydantoin sodium.

Oral pigmentation can be caused by the administration of a bismuth, silver or lead preparation. Quinacrine hydrochloride produces a yellow-brown pigmentation in the cupid region and a yellowish oral mucosa. Such pigmentation also may occur in jaundice, carotinemia, hemochromatosis, and adrenal cortical hypofunction.

In vitamin B complex deficiency, the tongue is edematous, rather purplish, and has enlarged

fungiform papillae. In pernicious anemia in the early stage, the tongue is red and sore; later, pallor and atrophy of the dorsal surface of the tongue are seen, with redness of its margin. In polycythemia vera, the tongue is engorged and cyanotic. In agranulocytosis, there is often a gangrenous area in the tonsil or pharynx. Black hairy tongue is not uncommon after antibiotic therapy. It occurs occasionally after roentgenotherapy or in patients with a gastric ulcer.

Superficial necrosis, swelling and ulceration of the gingivae have been reported within 48 hours after the administration of phenylazo-diamino-pyridine hydrochloride, a urinary antiseptic.

Among lesions of the mouth associated with tension and nervous strain are periodontal disease, aphthous stomatitis, acute necrotizing gingivitis, erythema multiforme, lichen planus, and probably pemphigus. Chronic emotional tension can produce a change in the chemistry of saliva, which can be the cause of periodontal disease.

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Production of congenital malformations by dietary measures

Josef Warkany. *J.A.M.A.* 168:2020-2023
Dec. 13, 1958

In recent years there has been increasing interest in problems connected with the origin of congenital malformations. Unusual attention has been focused on animal experiments that resulted in deformed offspring. Experimental production of congenital malformation in lower animal species has been possible for many decades, but the systematic modification of mammalian embryos became practicable only during the last 25 years. Many experimental methods are now available that result in production of congenital malformations in mammals, and among these are nutritional experiments that have been widely used as an instrument of teratologic research.

As early as 1933, Hale demonstrated that congenital malformations can be induced in pigs by a deficient maternal diet. In these experiments gilts of known stock were fed a diet deficient in vitamin A and in other nutritional factors. Among other malformations the offspring showed cleft palate and cleft lip. In control animals Hale showed that

supplementation with cod liver oil or green fodder prevented the anomalies. He also ruled out genetic determination of these malformations by matings of abnormal sons to their mothers and of abnormal brothers to the abnormal sisters. If the females were fed an adequate diet during pregnancy, these matings always resulted in a normal offspring.

Extensive studies in small laboratory animals were carried out at the Children's Hospital Research Foundation and the department of pediatrics of the College of Medicine, University of Cincinnati, Ohio. It was demonstrated that a syndrome of skeletal malformations could be induced in rats by a maternal diet deficient in riboflavin. Under strict experimental conditions, about one third of the offspring exhibited malformations. There was shortness of the mandible, and cleft palate was present in about one half of the abnormal young. The experiments proved that symmetrical and "familial" congenital malformations could be induced in mammals by environmental factors, a possibility frequently denied by many geneticists. Feeding a maternal diet deficient in riboflavin resulted mainly in skeletal malformations in the offspring, whereas anomalies of the soft tissue were rare.

Folic acid (pteroylglutamic acid) deficiency was developed into a most efficient teratogenic instrument. Giroud and Lefebres-Boisselot added 5 per cent succinylsulfathiazole (Sulfasuxidine) as an antibiotic agent to a maternal diet deficient in folic acid and obtained an offspring with malformations such as cleft lip and facial anomalies. When a purified diet deficient in folic acid but containing 1 per cent succinylsulfathiazole and 0.5 per cent x-methylfolic acid was employed by Nelson and co-workers (1956), almost 100 per cent of the offspring had cleft palate.

Thiersch (1952) observed cleft lip and palate and other malformations in human embryos whose mothers had been given aminopterin to induce therapeutic abortion. Other antimetabolites with a teratogenic action have been used in animal experiments.

Huge doses of vitamin A administered to pregnant rats during organogenesis produced cleft palate and other skeletal malformations in many of the young (Cohlan, 1954).

In the application of the results of animal ex-

periments to the question of congenital malformation in man, caution must be exercised because the animals can be subjected to artificial environmental conditions which cannot likely be duplicated in investigations of human beings.

Children's Hospital Research Foundation, College of Medicine, University of Cincinnati, Ohio

Oral manifestations in lichen planus

J. J. Pindborg. *Ugeskr.laeg.* 120:1327-1330
Oct. 2, 1958

Lichen planus is an inflammatory dermatosis characterized by papular eruptions on the skin with manifestations in the oral cavity. Occasionally, the disease is localized exclusively to the mouth.

Lichen planus may appear in an acute or chronic form; in both types lesions occur on the buccal mucosa opposite the posterior teeth or on the tongue but rarely on the lips.

In 5 of 15 patients examined there were lesions in the oral cavity only. The histologic features were typical.

A diet was prescribed in which dairy products predominated. Periodic oral administration of arsenic and intramuscular injections of magnesium thiosulfate produced a cure. In two patients, the oral lesions disappeared spontaneously.

It is important to distinguish between lichen planus and leukoplakia because the latter is a precancerous condition.

Kristianiagade 12, Copenhagen Ø, Denmark

Benign affections of the oral cavity

H. ten Henkel. *Meded.Med.Prodent.Res.* 16:1-20
Dec. 1958

In inflammatory progressive periodontal disease, the marginal gingiva appears intensively reddened and is detached from the teeth. Swellings occur which decrease toward the vestibular mucosa. Necrotic regions involve the papillae.

In herpetic gingivitis, small round vesicles appear on the palate, either isolated or grouped. For differential diagnosis, stomatitis aphthosa, lichen planus vesicularis and streptococcal stomatitis should be considered.

In lichen planus, a network of white lines appears on the inner cheek. Because of the often painless course of this inflammatory oral disease, the patients are seldom aware of its presence. Diagnosis may be difficult because of the resemblance of the clinical symptoms to those of leukoplakia. Biopsies should be made before final diagnosis.

In geographic tongue, localized thickening of the epithelial tissue occurs, and the contrasting white and red spots and lines produce a picture that resembles a map.

In mercurial gingivitis, the gingivae are red and swollen. Necrotic regions appear between the lower incisors. Brown plaques cover the enamel surfaces of the teeth. The clinical picture resembles that of infective necrotizing gingivitis. Establishing the cause, mercury bichloride poisoning, will aid diagnosis and treatment planning.

In lead poisoning gingivitis (gingivitis saturnia), a bluish-black line is seen along the extremely swollen gingival margin. Other parts of the oral mucosa, especially the lips and inner cheeks, show dark lines spreading to the surfaces of the lower anterior teeth. Patients complain of a sweetish taste and of the so-called "lead breath."

In mucosal hyperplasia, caused by ill-fitting dentures, the middle of the hard palate is swollen and the smooth tissues resemble compressed papillae. For differential diagnosis, papilloma and giant cell tumor should be considered.

In gingival hyperplasia, resulting from diphenylhydantoin sodium therapy, the gingivae are swollen, particularly along the anterior teeth. The interdental papillae are enlarged, sometimes covering the tooth surfaces. The epithelium is proliferated and shows hyperkeratosis. For differential diagnosis, leukemia and idiopathic fibrous hyperplasia should be considered.

In vitamin C deficiency, oral hemorrhages occur, caused by the lack of collagenous material in both the fibrous and osseous tissue. Pocket formation occurs. The dark-brown discoloration of the tooth surfaces is a characteristic symptom. Although vitamin C deficiency (scurvy) does not affect the enamel, slight hypoplastic enamel defects occur which can be attributed to trauma to the ameloblasts. The periodontal structures are profoundly affected; the gingival and periodontal membranes are congested; resorption of the al-

veolar bone and osteoclasts can be observed in the alveoli. The teeth become loose.

In diabetes mellitus, severe changes occur in the oral cavity, producing chronic gingivitis and periodontitis. The oral tissues are overgrown, especially between the teeth, and give a "cauliflower" appearance. Abscess formation occurs frequently in the maxillofacial region. The oral manifestations of diabetes mellitus resemble those of granulomatosis.

In gingivitis associated with pregnancy, the gingivae are enlarged, especially the interdental papillae, and dark blue. Hyperplasia of the gingivae (often called "gravidity tumor") is seen frequently. For the differential diagnosis, fibroma, granuloma, and giant cell tumor should be considered.

Diseases causing benign affections in the oral cavity may be classified into the following groups: (1) infectious diseases; (2) noninfectious diseases; (3) chemical or physical irritations; (4) nutritional disturbances and (5) endocrinic disorders.

Medinos Prodentia Research, Amersfoort, The Netherlands

Koplik's spots

Lancet No. 7053:950 Nov. 1, 1958

Henry Koplik was 38 years old when, in 1896 at the Good Samaritan Hospital, New York, he described small bluish-white spots surrounded by a reddish areola on the mucous membrane of the mouth during the prodromal stage of measles. The merit of Koplik's report lies in his shifting the emphasis from the palate to the mouth.

"There is nothing especially distinctive about the eruption in the pharynx, or on the hard or soft palate in measles," he said. "The throat, in the beginning, is reddened, the fauces, the soft palate, may be spotted but this is also the case in many afflictions, such as grippe, roeteln, cattarrhal angina, and scarlet fever. On the buccal mucous membrane and the inside of the lips, we invariably see a distinct eruption. It consists of small, irregular spots, of a bright red color. In the center of each spot, there is noted, in strong daylight, a minute bluish white speck. These red spots, with accompanying specks of a bluish white color, are absolutely pathognomonic of beginning

measles, and when seen can be relied upon as the forerunner of the skin eruption."

Koplik's spots have stood the test of time.

7 Adam Street, Adelphi, London W.C.2, England

Epidermoid carcinoma of the jaw developed from a follicular cyst: report of a unique case

G. Güntert. *Zahnärztl. Welt & Reform* 59:623-624 Nov. 25, 1958

Patients with follicular cysts of the jaws are frequently seen in dental practice. Epidermoid carcinomas of the jaws are not common, but the development of such a tumor from a follicular cyst has not been reported in the literature.

The patient, a 20 year old man, appeared at the dental office for treatment of pain in the upper jaw, of a rheumatoid character probably associated with a bullet wound suffered during the war. Through cell proliferation and cystic changes, an epidermoid sarcoma had developed from a traumatic, follicular cyst and filled almost the entire oral cavity. Roentgenograms revealed that the upper left third molar had not developed and its tooth germ formed the basis for the follicular cyst. The left upper cuspid was impacted and displaced. The region between the cuspid and the unerupted third molar showed severe osteolytic changes. The root of the cuspid was surrounded by obviously malignant tissue which extended to the roots of the first bicuspid. In the enlarged periodontal membrane were firm cords of keratinized epithelium.

Biopsy showed an undifferentiated transitional cell carcinoma with various mitotic figures.

After an unsuccessful search for a possible primary tumor, treatment consisted of radical enucleation of the epidermoid carcinoma and the remaining tissues of the follicular cyst.

Today, eight years after surgery, the patient is free of disease and there appears to be little danger of recurrence. As in so many instances of malignant tumors of the jaws, the patient's life was preserved by early diagnosis and immediate radical surgery.

Fürst Wilhelm Strasse 2, Sigmaringen, Germany

Ulceration of the oral mucosa

W. E. Fleming. *Australian D.J.* 3:363-368
Dec. 1958

Ulcers in the mouth usually are caused by one or more of the following factors: trauma, vitamin deficiency, allergy, nervous disturbances, blood diseases, specific microorganisms, tumors, or rare conditions of unknown etiology.

Many dentists when confronted with oral ulcers advise the patient to see his physician. The only professional men trained in the pathology, medication and surgery of oral diseases are dentists. The *Medical Journal of Australia* is correct in asserting that "the majority of medical graduates have little or no appreciation of the clinical pathology of the mouth."

The first step in investigating ulcers of the mouth is to let the patient give a history in his own words. The patient's general health is important; sometimes it is futile to attempt treatment of a local condition without seeking to improve the patient's general health. For this, cooperation with the patient's physician is essential.

The macroscopic clinical examination should be done carefully, and the following points noted: site, number of ulcers and general appearance. The lymph glands which drain the ulcerated region should be palpated to determine if they are involved.

Some oral ulcers are associated with hypochromic anemia and will not clear up until the blood has been restored to normal. The dentist should examine the blood for diagnostic purposes. If any unusual blood picture is found, other than disturbance of iron content or cell count, the patient should be referred to a hematologist for a complete blood examination.

In most instances of oral ulcer, the dentist should take a smear from the ulcer and examine it under the microscope; sometimes this examination will disclose the predominance of a virulent form of microorganism which may be a causative or contributing factor.

If allergy is suspected, inquiry may lead to identification of the offending allergen.

If any suspicion exists that an ulcer may be malignant, a biopsy section should be taken and sent for examination. The dentist should be suspicious of any ulcer which fails to heal.

A first step in treatment is to clean up the mouth. If trauma is a cause of ulceration, the cause should be removed. Faulty diet should be corrected either by advising the consumption of certain foods or by giving vitamin concentrations or by a combination of both.

Patients with ulcers due to diphtheria or syphilis, and acute febrile lesions, naturally will be referred to the physician. Patients with malignant ulcerations will be referred to a surgeon or roentgenologist.

If all instances of mouth ulceration were investigated as suggested, far fewer of them would be classed as "recurrent aphthous ulcers of unknown origin."

61 Collins Street, Melbourne, Australia

Cancer of the skin of the face and its relation to occupational exposure to sunrays

H. Gartmann and E. M. Reiners.
Dermat.Wschr. 136:1123-1132 Sept. 1958

The carcinogenic effect of sunrays on the skin of the face and the head was investigated in 2,473 patients (1,313 residing in rural areas and 1,160 residing in urban areas) at the Dermatologic Clinic of the Municipal Hospital of Augsburg, Germany.

A review of all case histories revealed that the incidence of malignant tumors of the face, neck and head (including carcinoma of the lips) was twice as high in rural patients who were occupationally exposed to sunrays as in those residing in the city.

Carcinoma of the lips comprised about 30 per cent of the malignant tumors of the maxillofacial region, and about 4 per cent of all malignant tumors observed. In the vast majority of instances, the continuous occupational exposure to the rays of the sun, experienced by farmers and gardeners, caused the development of precancerous and cancerous lesions in the exposed regions. Ulcerative lesions were the most frequently observed type. According to their frequency, the further order is as follows: nodular lesions, fissured lesions, papillary lesions and atrophic lesions.

Carcinoma of the lip, obviously caused or promoted by sunrays, has been seen far oftener in

the lower lip (about 95 per cent) than in the upper lip (about 5 per cent). It is more common in men (98 per cent) than in women (2 per cent). It occurred principally in patients from 40 to 60 years old. Senile keratosis was often the first symptom observed.

The author's assumption that the rays of the sun play an important role in the etiology of malignant tumors of the maxillofacial region, especially squamous cell carcinoma of the lip, was substantiated by the results of animal experiments in which similar cancerous lesions were produced by irradiation with ultraviolet rays.

Salomonstrasse 18b, Leipzig C.I, Germany

Scleroderma: its oral manifestations

D. B. Smith. *Oral Surg., Oral Med. & Oral Path.*
11:865-874 Aug. 1958

The dentist must accept the responsibility of recognizing systemic as well as local diseases and of channeling them to the source of proper treatment. One of the myriad systemic diseases which manifest themselves in the oral cavity is progressive systemic sclerosis or scleroderma.

The disease occurs at any age and affects females more often than males. The most common finding of dental significance in scleroderma is the rigidity and thinness of the lips and the difficulty encountered in retracting them. This rigidity may prevent adequate opening and interfere with speech and mastication. Extreme pressure may even cause ulceration of the mucosa by the teeth. The claim that the tongue, the soft palate and the larynx frequently are involved does not seem to be substantiated.

If the oral mucosa is involved, it is pale and thin and tends to ulcerate. Buccal pigmentation is rare. Pseudoankylosis may be caused by restricted mouth opening, and the obliteration of the fornix may lead to poor oral hygiene and its subsequent sequelae. The ankylosis may result from involvement of the muscles of mastication. Although there is no change in the vascular components, hemorrhage after simple tooth extraction may be severe; this is believed to result from the inability of the vessels to contract.

Tilting of the teeth and resorption of the alve-

olar ridge, recession of the gingivae, delayed tooth eruption and exfoliation of teeth may result from extrinsic pressure.

A characteristic dental roentgenographic finding is widening of the periodontal membrane. Patients with scleroderma should receive periodic dental roentgenographic examinations to determine whether the changes in the periodontal membrane are permanent or transitory.

Two case reports demonstrate the manifestations of the disease.

Veterans Administration Hospital, Dearborn, Mich.

Fallacy of diagnosing diseases by the appearance of the tongue

B. Gans. *Zschr. psychosomat. Med.* 4:304-306
July 1958

Since ancient times and probably originating from folklore superstitions, a deep-rooted belief has been held by many lay persons and some physicians and dentists that "furred" tongue and other tongue conditions furnish significant signs which can be used to diagnose various diseases.

Review and analysis of more than 7,500 case reports, describing acute and chronic diseases in patients ranging from infants to senescent men and women, yielded no evidence that a relationship exists between these diseases and the presence of a furred tongue.

Periodontal disease, tonsillitis, benign and malignant tumors, wherever their site may be, cannot be diagnosed by observation of the condition of the tongue. Not a single sign exhibited by the tongue reveals obstruction of the airways, disturbance in glandular activity or any type of infection or inflammation. A furred tongue is neither the cause nor the result of a poor appetite or irregular bowel movement.

Similarly, no association was established between any condition of the tongue and the presence of inherited or acquired abnormalities ranging from malocclusion to mongolism.

Pathologic symptoms of the tongue are signs only of pathologic changes occurring on or within the tongue.

Klinik für psycho-somatische Medizin, Hamburg-Blankenese, Germany



Figure 1 Left: Relief on the Church of St. Mark in Venice (by an unknown sculptor of the tenth century) shows a barber extracting a tooth. Center: Painting (by an unknown Flemish artist of the eighteenth century) depicts the toothbreaker at a public fair. Right: Etching (by Peter Alexander Wille, a German engraver of the eighteenth century) shows a traveling dental charlatan

General

The dentist in art

Curt Proskauer. *Lesestunde* 34:16-17
April-June 1958

It is not just by chance that such an astonishing number of paintings, drawings, etchings and sculptures of the sixteenth and seventeenth centuries have had as their main subject the dentist—if this title can be bestowed on the early dental operators who plied their trade of tooth-pulling and tooth-breaking at public fairs.

Clowns, tightrope walkers, buffoons and harlequins almost always accompanied the early dentist. They cut their capers on a raised platform and roused the curiosity of the spectators by shouting, sounding trumpets and beating drums. Their presence added something so picturesque to the bizarre scene and the demeanor of the toothbreaker, that it could not fail to inspire many an artist.

The dental charlatan was the favorite subject for several Flemish and Dutch masters. Brouwer, Dou, Honthorst, Molenaer, Ostade, Rombouts, Steen, Teniers, the Brueghels and many other painters—as a reaction to the prevailing court and church art—began to depict the life of the peasant

and *petit bourgeois*. These artists preferred to paint the plain people in their houses, the inns, on market places and in the fields; to depict simple men, women and children in their zestful, rowdy pleasures at fairs and carnivals.

In this milieu the bizarre exploits of the early dentist fitted admirably, providing excellent material for the artist who wanted to observe everyday life and to put everyday happenings on his canvas.

What made the spectacle of public tooth-breaking and tooth-pulling at fairs and open market places especially attractive to the gaping audience as well as to the artist, was perhaps not so much the behavior of the early dentist and his assistants as the reactions of the victim who at the moment of tooth extraction expressed all phases of comedy simultaneously with the tragedy of human suffering.

It is, therefore, no wonder that in early days the public tooth pulling by men without skill and experience, sometimes with swords or knives, was regarded by many as a show well worth seeing. Acrobatics, comedy and barker's tricks were employed to persuade the timid spectator to take the last difficult step to the toothbreaker's podium.

The noise of the barkers was intended to drown out the cries of pain of the suffering patient who was permitted to leave the podium only after he had lost the diseased tooth as well as several healthy teeth, and sometimes even a piece of his

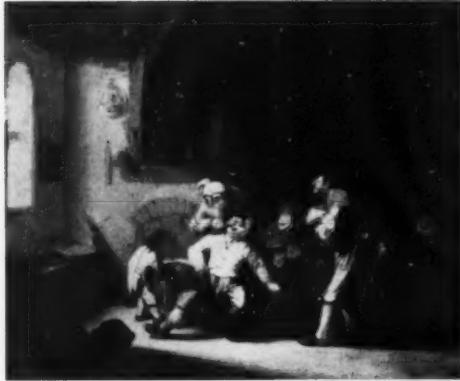


Figure 2 Painting (by Adriaen van Ostade, a Dutch master of the seventeenth century) depicts a barber and his dwarfish assistant in action



Figure 3 Painting (by an unknown Dutch artist of the eighteenth century) shows a surgeon examining the patient's teeth



Figure 4 Painting by Matthew van Hellemont, a Flemish painter of the seventeenth century, depicts the different moods of dentist and patient after tooth extraction

jaw. These victims of early dental art usually became objects of mockery for the audience.

Many paintings, drawings and sculptures give a naturalistic, almost photographically faithful, depiction of early dental procedures, the peculiar behavior of the operators, assistants and patients, and furnish a valuable documentary representation of the doings and dealings of our professional ancestors.

In the larger cities, barbers and surgeons also practiced dentistry. Many of these men knew how to extract teeth; they prescribed remedies to cure toothache and sold concoctions to clean the teeth. Instead of performing their work on street corners or at public fairs, they practiced in their "offices," small rooms stuffed with scientific books, medical and dental instruments, bottles and jars. Usually there also was a huge globe present, and a stuffed crocodile hanging from the ceiling. The clothes and headgear of these more skilled dental practitioners lacked the pompousness of itinerant dental quacks, and their professional behavior showed no similarity to that of the toothbreakers.

The paintings of the old masters prove that dentistry at that time was not practiced exclusively by charlatans and quacks. Similar to surgery and ophthalmology—which at that time also was practiced by itinerant lithotomists and oculists—dentistry was practiced by responsible and qualified representatives of the profession whose descendants, enriched by the continued progress in sciences and technics, became the dentists of today.

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A preliminary study of dental porcelains

Jean Hodson. *Am.Ceramic Soc.Bul.*
36:313-316 Aug. 15, 1957

Porcelain is used in dentistry in two forms: (1) as a completely fired and finished product, for artificial teeth and facings, and (2) as a porcelain powder that is fired in the dental laboratory to make inlays, veneer crowns, root tips and other pieces. The first type represents the chief production of porcelain for dentistry. Porcelain teeth and facings are used in the construction of bridges and dentures. Commercial firms manufacture

these teeth as finished ceramic products and provide a selection of shapes, sizes and colors. From these, the dentist chooses the tooth or facing most suited to the work at hand. Some modification may be necessary. These changes are accomplished by grinding or by adding porcelain, and by staining to modify the color.

A preliminary study of 15 porcelain powders used in the School of Dentistry, University of Washington, made by examining the powders microscopically and by roentgen-ray diffraction, revealed the powders to be composed of feldspar, quartz and glass. Particles of feldspar and of coloring minerals were present as enclosures in glass fragments. Some of the high fusing porcelains were a feldspar-quartz mixture, but all the others were partially melted frits.

The use of frit as the only body constituent of dental porcelain is an unusual ceramic practice, and is dictated by the characteristics required of a dental porcelain.

From an impression of the prepared tooth and of the neighboring teeth, a die and a working model are fabricated. A mold for the porcelain is made by adapting a platinum foil matrix over the die. On this form the powder is applied in layers. Each layer is fired before the next layer is added. Distortion of the matrix caused by the shrinkage of the porcelain is counterbalanced by refitting the foil to the die before the next layer of porcelain is applied. When the final shape is attained, the piece is fired again to smooth the surface. After this glaze firing, the platinum matrix is removed and the restoration is cemented to place in the patient's mouth.

One of the disadvantages of dental porcelain is its tendency to fracture when subjected to the impact forces of mastication. Esthetic results can be obtained only with translucent materials; therefore, the vitreous porcelains are preferred over the more opaque bodies, even though the former are less resistant to impact. The restoration may be weakened by the gas bubbles or spherical blebs that are present in all dental porcelains. Bubbles as large as 0.064 to 0.130 mm. were observed under the microscope in all the fired samples examined. Methods for firing the restorations under vacuum have been developed in an effort to increase the density and strength of the porcelain.

In the interest of the patient, the dental restoration must be constructed in as short a time as practicable. Therefore, most manufacturers supply a special type of frit as the porcelain powder. The fritting process promotes homogeneity of materials; it is used to control the melting temperature of lower fusing porcelains, and it allows short firing schedules. Twenty minutes is the usual time required for drying and firing a dental porcelain. Melting is facilitated by the fineness of the powder, most of which is finer than 325 mesh. The small particle size is a factor in the forming procedure and no binders are used with the frit; it is simply mixed with water and applied on the matrix with the carving instrument. Close packing of the particles is accomplished by vibration and by control of the water content. The compacted porcelain is carved to shape and brushed smooth while it is still moist because the piece is very friable when dry. An unfired porcelain veneer crown is carved oversize to allow for shrinkage during firing.

It is important that the color of the natural tooth is reproduced in the restoration. The colors are obtained by mixing different porcelains or by applying different shades of powders in layers. Considerable artistic ability is required to blend the colors while shaping the porcelain.

Shrinkage of the porcelain during firing changes the shape of the matrix. This distortion is corrected by replacing the piece on the die and readapting the foil to its original shape through burnishing and swaging. A new layer of porcelain then is applied and fired, and the foil again is corrected for distortion. Thus, the piece is built up until the desired color and shape are attained, which may require from three to five applications and firings.

After the glaze firing, the platinum is stripped from the porcelain and the restoration is complete.

The outer shape is achieved by molding the powder and by grinding excess portions of fired porcelain. The high viscosity of the feldspar glass and the presence of unmelted crystals in the glass help to stabilize the porcelain during firing.

The preferred glaze is obtained by the glaze firing. This method seals the pores that are exposed by grinding. When this procedure is not advisable because of the rounding of angles, an

applied glaze is used. The glazing material is a finely powdered glass which can be applied to porcelain restorations and manufactured porcelain teeth.

School of Dentistry, University of Washington, Seattle, Wash.

**Yellow fever in dental practice:
report of case**

Ernesto Cohn. *Deut. Stomat.* 8:122-124
Feb. 1958

The practice of dentistry or of one of the dental specialties in a subtropical or a tropical country is different from that in Central Europe, Canada or the United States. For instance, dentists practicing in Mexico, Ecuador or India often encounter problems in their routine practice which are rarely experienced by European or American dentists.

A South American dentist must examine thoroughly not only the regions of the mouth or the face but he must consider the possibility that some of the oral manifestations are associated with tropical diseases.

Yellow fever, for instance, is seldom seen in patients consulting European or American dentists, but this acute infectious disease, caused by viruses such as *Charon evagatus*, *Aedes aegypti*, *Aedes leucocelaenurus*, *Haemagogus capricorni* or *Aedes simpsoni*, and transmitted by mosquitoes, must be considered as a factor in the oral and dental examinations of South American, especially Mexican, patients.

In the case reported, the patient, a middle-aged Guatemalan woman, appeared at the author's dental office in Puebla di Zaragoza, Mexico. Her main complaint was bleeding from the oral mucosa. Chill and pain in the head, back and limbs were present. The temperature varied from 103° and 105° F. Vomiting occurred frequently and the vomited material was dark (black vomit). Her eyeballs were yellowish.

The physician, who had referred the patient to the author for treatment of several loose lower anterior teeth, had diagnosed the condition as a comparatively mild and innocuous instance of icterus.

The patient stated that she had never before

consulted a dentist because her teeth were free of carious lesions. Only 24 hours prior to the dental examination, bleeding in mouth and nose occurred and the lower incisors suddenly became loose.

Oral examination revealed that the tongue was dry and furred, and there were several punctiform lesions which bled slightly but continuously. More severe hemorrhages were observed in the nasal and oral mucous membranes. The gingival tissues were dark red and swollen. All lower incisors were extremely loose and movable; the upper incisors also were loose but to a lesser degree. Halitosis was particularly strong.

The author, aware of the possibility of the presence of yellow fever, made no attempt to treat the dental condition, and referred the patient to the hospital for tropical diseases. There, an immediate hematologic examination showed that icterus was an erroneous diagnosis; the jaundicelike symptoms resulted from necrosis of the liver obviously caused by yellow fever. Unfortunately, the patient died 24 hours after admittance to the hospital.

It is important for a dentist practicing in Central and South America to be aware of the possible association between certain oral or dental manifestations and the presence of tropical diseases such as yellow fever, leprosy, pinta, oculomycosis and malaria.

8 Poniente 112-113, Puebla di Zaragoza, Mexico

Dermatitis in dentists

Brit.M.J. No. 5111:1546 Dec. 20, 1958

Q.—What are the common causes of dermatitis of the tips of the fingers in a dentist?

A.—The commonest cause is an allergic reaction to contact with local anesthetics, but all other materials in dental practice should be considered as allergens, such as antiseptics, antibiotics, nickel, chrome, oil of cloves, amalgam, acrylic resin and so forth. In a recent instance the problem was not solved until patch tests related to substances found in the home had been made and incriminated a streptocarpus plant.

British Medical Association, Tavistock Square, London W.C.1, England

**What the dentist should know
about oral manifestations
of various blood diseases**

A. Kohlschmid. *Deut.Zahnärztbl.*
12: 770-772 Nov. 22, 1958

Early symptoms of various blood diseases frequently are observable in the oral cavity. During dental examination the dentist often is able to make an early diagnosis which may save or prolong the patient's life.

The significance of such an early diagnosis by the dentist and the consequences of failure to make such a diagnosis are demonstrated by three case reports.

Pathologic changes in the leukocyte blood count may be classified as (1) leukemia, (2) agranulocytosis, (3) lymphadenoleukopoiesis, (4) Mikulicz's disease and (5) Hodgkin's disease.

The initial symptoms of leukemia, appearing in the oral cavity, are: hyperemia of the mucosa, swelling of gingival tissue, hemorrhage, stomatitis, thick and sticky coating of teeth and tonsils, ulcerous and necrotizing changes on the surface of the inner cheek, and secondary infections.

In the first case reported, the patient, a 45 year old man, complained of fulgurant pain in both jaws. After completion of the indicated dental procedure (antibiotic treatment and drainage of gingival abscesses), the pain decreased temporarily. Three weeks later the patient appeared at the dental office. The dentist's diagnosis was necrotizing ulcerative gingivitis. The patient was referred to the medical clinic of the University of Munich. There necrosis of the entire region between the upper left lateral incisor and first bicuspid was observed, a condition which gave reason to suspect the presence of leukemia. The final diagnosis, myelopathic anemia associated with agranulocytosis, was made too late to save the patient's life.

The fulgurant pains in both jaws, the presence of gingival abscesses, hemorrhage, atrophy of the tongue and the (probably observable) loosening of several teeth were initial signs of the syndrome, which the dentist should have recognized immediately.

The initial symptoms of lymphadenoleukopoiesis are swellings of the extraparotid glands situ-

ated between the superficial and deep fasciae covering the parotid gland.

Infectious mononucleosis, Mikulicz's disease and Hodgkin's disease may be recognized early by characteristic swellings of the tonsils and salivary glands.

Agranulocytosis produces early oral manifestations such as ulcerous and necrotizing changes in the mucosa, especially in the neighborhood of tonsils and pharynx, thrombopenic purpura, hemorrhage and facial neuralgia.

In the second case reported, the patient, a 43 year old man, complained of recurring hemorrhage in the mouth. Two teeth had been removed and the alveolar wounds did not heal satisfactorily. The gingiva was swollen and dark red. The interdental papillae were covered with a gray coating. Halitosis was extremely strong. The dentist diagnosed the condition as "scurvy," and referred the patient to the clinic. The correct diagnosis, agranulocytosis associated with thrombopenia and panmyelophthisis, was made too late; the patient died six days after admittance to the clinic. As in the previous case, an early and correct diagnosis by the dentist would have permitted immediate treatment and possible cure.

Pathologic changes in the erythrocyte blood count may be classified as (1) pernicious anemia (Addison-Biermer disease); (2) erythrocytosis including erythremia, and (3) idiopathic hypochromic anemia.

The initial symptoms of pernicious anemia, appearing in the oral cavity, are: ulcerative glossitis (resembling Hunter's glossitis), burning sensations of the tongue, pain usually appearing after eating hot or spiced meals, blisters on the mucosa, disturbance or perversion of the sense of taste, hypertrophy of the tongue which is covered by a verrucous white coating and *Streptococcus viridans* infection in mucosa and submucosa. Later, atrophy of the papillae fungiformes and filiformes gives the tongue a smooth waxy appearance.

In the third case reported, the patient, a 50 year old woman, complained of pain in the mucosa, lips and tongue. Dental examination revealed paleness of lips and mucosa, some parts of which were yellowish. Ulcerations occurred on the tongue, probably caused by trauma and infection. The dentist's early and accurate diagnosis, pernicious anemia, permitted immediate introduc-

tion of vitamin B₁₂ therapy which resulted in disappearance of the symptoms and complete cure.

The oral manifestations of erythrocytosis and erythremia are as follows: bluish discolored mucous membranes, enlarged gingival papillae, tumorous swellings on the palate and pain of a neuralgic character. Later the face appears enlarged and dark red.

Idiopathic hypochromic anemia produces the following oral manifestations: pale oral mucosa, purplish petechiae scattered over gingiva, cheeks and palate, hemorrhage, extremely smooth tongue caused by atrophy of the papillae and susceptibility to infection and ulceration. Septicemia frequently occurs after tooth extraction.

Hemophilia A and B are characterized by spontaneous bleeding in the oral cavity. Tooth extraction is often associated with severe hemorrhage.

Thiersch Strasse 31, Munich 22, Germany

Modern dental offices: lighting and color

José Alvarez de Eulate y Maeztu.
Odontoiatria, Madrid 15:117-123 March 1958

Proper lighting and discriminating color selection in the dental office will make the outlook of patients a little brighter. The lighting of a dental office differs from that of the medical office, especially the operating room of a surgeon. The surgeon, who always has many assistants, need not shift his gaze from the operative field. As a result he is not forced continually to make accommodative changes of the lighting range. The dentist, even when he has an assistant, works within a locally illuminated field. In the lighting of a dental office, the following factors must be considered: (1) the dimensions of the object to be illuminated; (2) the degree of contrast required between teeth and their background or surroundings, and (3) the amount of light reflected to the eyes of the dentist.

The preparation of a cavity in a tooth requires an increase in luminosity to make the details of the work more readily perceptible. The increased luminosity shortens the chairtime and reduces fatigue.

The smaller the object to be examined, the greater the amount of light required to visualize it clearly. Proper lighting of the dental office presupposes adequate illumination without glare. Glare can be eliminated or minimized by providing enough light to prevent excessive contrast between the light in the entire office and the brightly lighted operating room, by screening and shading the sources of light, and by using soft colors on the walls of the office.

Green and blue are restful and harmonize with the office equipment which usually is white. The floors should be either grey or a shade darker than the green or blue of the walls. Linoleum floors are less tiring to the dentist's feet than are those made of concrete or artificial stone. The dental chair should be surrounded by an elastic mat (light grey, green or blue) which provides softer footing for the dentist and prevents breakage of instruments if they are dropped.

Incandescent light has a comparatively large proportion of infrared rays and produces heat. Fluorescent light does not radiate heat but emits both visible and invisible rays that may cause ocular injuries unless the source of light is kept at a distance of at least 80 cm. from the eyes. Proper shading, therefore, is essential.

The color of the light, regardless of its source, is important to the dentist in matching tooth shades. An artificial tooth or a filling that seemed to be perfectly matched in daylight may be a failure as to color when observed under artificial light.

These are some of the factors which must be considered in planning the lighting and the color of a modern dental office, especially of the reception room and the operatory.

Jorge Juan 39, Madrid, Spain

New equipment

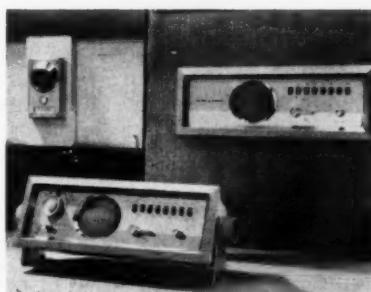
The information reported here is obtained from manufacturers. Dental Abstracts does not assume responsibility for the accuracy of the information. The interested reader may direct his inquiry to the manufacturer.

The Stephenson dental resuscitator is a lightweight, mobile instrument designed to cope with such respiratory emergencies in the dental office as syncope, surgical shock, laryngeal spasm, allergic reaction to a local anesthetic, toxic respiratory collapse, coronary occlusion and circulatory collapse. The resuscitator provides automatic pressure-controlled respiration wherein the rate adjusts automatically to the patient's capacity. It aspirates mucus or blood. The apparatus can be regulated for any desired mixture from 100 per cent oxygen to 50 per cent oxygen and 50 per cent nitrogen. *Stephenson Corp., Red Bank, N.J.*

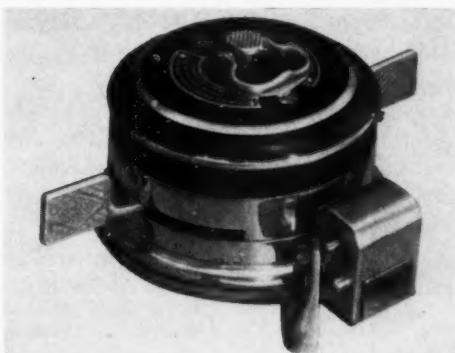


The "Vari-Trol" is a new air turbine control that fits all air turbine handpieces and offers infinite variations of speed and torque. The Vari-Trol permits many new uses for high-speed turbine drills. The foot-operated control can be adapted to any high-speed air turbine drill now on the market. *Encore Power Division, Inc., 1632 Southeast Eleventh Avenue, Portland 14, Ore.*

The new "Talk-A-Phone" intercommunication system uses no tubes, emits no heat and does not mar or damage walls. The transistor circuit will last indefinitely. The intercommunication-radio system can be used to answer outside doors from any room. Conversations can be held between rooms; private or non-private conversations can be held; rooms can be monitored. Units can be flush mounted or surface mounted. *Talk-A-Phone Co., 1512 South Pulaski, Chicago 23, Ill.*



A variable speed foot controller for use with the "Air-Drive 400" handpiece is available. The controller enables the user to change quickly from low to high speed without use of the hand regulator. It permits low-speed operation for removal of dentin, and high-speed operation for removal of bulk tooth material. The same unit provides air to blow chips, when the user depresses the pedal. *Air-Drive Division, Midwest Dental Manufacturing Co., 4439 West Rice Street, Chicago 51, Ill.*



Doctoral and Masters'
dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Histologic study of bone repair in lathyritic albino rats. *Mohamed Said Ahmed Fahim.* 1958. M.S.D. *Indiana University.*

Pretreatment of teeth with sodium fluoride prior to stannous fluoride application in the human. *Hashim Abdul-Ghaffar.* 1959. M.S.D. *Indiana University.*

A histologic study of regeneration in the supporting dental tissues of dogs following experimental surgery. *Nicholas R. Marfino.* 1958. M.S. *Loyola University (Chicago).*

Mitotic activity of oral epithelium when exposed to hydrogen peroxide. *Anthony W. Gargiulo.* 1959. M.S. *Loyola University (Chicago).*

Zygosity determination using oriented lateral roentgenographic cephalometric headfilms. *Gene I. Campbell.* 1959. M.S.D. *University of Washington.*

A serial study of the growth of various cranial and facial bones in the macaque monkey. *Erik B. Pihl.* 1959. M.S.D. *University of Washington.*

A serial study of facial growth as related to cranial base morphology. *Kersam E. Elmajian.* 1959. M.S.D. *University of Washington.*

Influence of the medicated tooth pastes "Para-Dentax" and "Blend-a-med" on the oral flora (Die Beeinflussung der Mundflora durch die Mundheilpasten "Para-Dentax" und "Blend-a-med"). *Heinrich Partenheimer.* 1958. DR.MED.DENT. *University of Bonn, Germany.*

Removable and fixed splints in the treatment of periodontosis (Herausnehmbare und feste Schienen für die Behandlung der Parodontose). *Heinz Adolar Gustmann.* 1958. DR.MED.DENT. *University of Bonn, Germany.*

Dental caries in miners: evidence of the relation between man and his environment (Über die Karies bei Bergleuten: Ein Ausdruck von Mensch-Umwelt-Beziehungen). *Felix Boekels.* 1958. DR.MED.DENT. *University of Bonn, Germany.*

Ultraviolet rays, a supporting therapy of periodontal disease (Ultraviolett Strahlen als unterstützende Therapie der Parodontopathien). *Brigitte Czogla.* 1958. DR.MED.DENT. *University of Bonn, Germany.*

Studies of the decalcification phenomena in the dental pulps of children and juveniles (Studien über die Verkalkungserscheinungen in kindlichen und jugendlichen Pulpen). *Helma Humpert.* 1958. DR.MED.DENT. *University of Bonn, Germany.*

Investigation of Schiesser's dry heat sterilization apparatus (Untersuchungen über den Heissluft-Sterilisationsapparat nach Schiesser). *Wolfgang Mangold.* 1958. DR.MED.DENT. *University of Frankfurt/Main, Germany.*

Elastic alignment of the posterior teeth in partial lower dentures (Elastische Aufstellung der Mahlzähne bei partiellen Prothesen im Unterkiefer). *Rudolf Alt.* 1958. DR.MED.DENT. University of Frankfurt/Main, Germany.

Formation of the posterior parts in the construction of complete upper dentures (Über die Ausgestaltung der rückwärtigen Teile bei der Konstruktion von totalen Prothesen im Oberkiefer). *Tilfried Otto.* 1958. DR.MED.DENT. University of Frankfurt/Main, Germany.

Experimental investigations of recently introduced self-curing acrylic resins (Experimentelle Untersuchungen neuerer schnellhärtender Kunststoffe). *Günter Raabe.* 1958. DR.MED.DENT. University of Kiel, Germany.

Casting and soldering with the dental gold alloy "Platigo": experimental investigations (Giessen und Löten mit der zahnärztlichen Goldlegierung "Platigo": Experimentelle Untersuchungen). *Eberhard Guttack.* 1958. DR.MED.DENT. University of Kiel, Germany.

Relationship between the formation of the palate and the formation of the face (Beziehungen zwischen Gaumengestaltung und Gesichtsgestaltung). *Gisela Lutz.* 1957. DR.MED.DENT. University of Leipzig, Germany.

Röntgenographic and histopathologic studies of the course of chronic periodontal and granulation processes after root canal treatment with hydroxyl iontophoresis (Röntgenologische und histopathologische Studien über den Verlauf chronischer und Granulationsprozesse nach Wurzelbehandlung mit Hydroxyl-Ionophorese). *David Haunfelder.* 1957. DR.MED.DENT. University of Würzburg, Germany.

Clinical and histologic contribution to the problem of adamantinoma of the lower jaw: surgical techniques (Contributo clinico e istologico al problema degli adamantinomi nel mascellare inferiore: tecnica operatoria). *Giovanni Nitti.* 1958. SPEC.ODONT. School for Dental Specialties, University of Bari, Italy.

Tuberculous lesions in the tissues of the tongue: report of case (Un caso di lesioni tubercolosi tissurale della lingua). *Michele Sivo.* 1958. SPEC.ODONT. School for Dental Specialties, University of Bari, Italy.

Pyorrhea alveolaris, an allergic disease: tentative treatment with antihistamines (La piorrea alveolare come malattia allergica: tentativi di terapia con gli antihistaminici). *Arturo Olivieri.* 1958. SPEC.ODONT. School for Dental Specialties, University of Bari, Italy.

Neurovegetative dystonia associated with periodontal disease (Distonie neuro-vegetative accompagnare alle paradenziopatie). *Antonio Giordano.* 1958. SPEC.ODONT. School for Dental Specialties, University of Bari, Italy.

Aerosol treatment of pyorrhea alveolaris (L'aerosolterapia nella piorrea alveolare). *Luigi Minenna.* 1958. SPEC.ODONT. School for Dental Specialties, University of Bari, Italy.

Systemic diseases producing oral and periodontal lesions (Alterazioni dentali e parodontali in rapporto alle principali malattie del ricambio). *N. de Cataldo.* 1958. DR.MED.DENT. Clinica Odontoiatrica, University of Milan, Italy.

Pain and its treatment in dental practice (Il dolore e la sua terapia in stomatologia). *L. Eberli.* 1958. DR.MED.DENT. Clinica Odontoiatrica, University of Milan, Italy.

Developmental disturbances in the changing dentition (Disturbi di sviluppo delle permute dentarie). *A. Sganetta.* 1958. DR.MED.DENT. Clinica Odontoiatrica, University of Milan, Italy.

Frequency of tooth malposition and malocclusion (La frequenza delle anomalie di occlusione a delle malposizioni dentarie). *M. della Valle.* 1958. DR.MED.DENT. Clinica Odontoiatrica, University of Milan, Italy.

Influence of the saliva on the retention of complete dentures (Influenza della saliva nella ritenzione delle protesi totali). *A. Cavicchioni.* 1958. DR.MED.DENT. Clinica Odontoiatrica, University of Milan, Italy.


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